DOCUMENT RESUME

ED 421 925 HE 031 446

TITLE	The Capacity of New Jersey's Higher Education System. A Report to the Governor and Legislature.
INSTITUTION	New Jersey State Commission on Higher Education.
PUB DATE	1998-04-00
NOTE	123p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Access to Education; Cooperative Programs; Cost Effectiveness; Disadvantaged Youth; *Educational Demand; Educational Opportunities; *Educational Supply; Enrollment; Equal Education; *Higher Education; *Needs Assessment; Standards; Student Mobility
IDENTIFIERS	*New Jersey

ABSTRACT

This report was written in compliance with the New Jersey Higher Education Restructuring Act and evaluates current and projected higher education needs across the state, including the need to establish, close, or consolidate institutions of higher education. The report addresses: (1) capacity issues, concluding that there is no need to establish, close, or consolidate institutions, although some regions have limited access to postsecondary degree programs; it also recommends that the state continue development of distance learning technologies and environments; (2) outmigration, urging continuing support for high-achieving students who enroll in in-state institutions; (3)educational opportunity, calling for greater support for economically and academically disadvantaged students and students for whom English is a second language; (4) cost effectiveness, where a review of low enrollment programs is recommended; (5) collaboration and articulation, with recommendations for continued improvement of articulation between colleges and collaborative degree programs. Following the overview, individual sections of the report provide further information on: New Jersey's system of higher education in a national context; a summary of public hearings and other testimony; indicators of demand for higher education in New Jersey; issues of higher education supply and access; and recommendations. Five appendices include demographic data, definitions, SAT and High School Rank Distributions of First-Time Freshmen, and enrollment trend data. (DB)

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The Capacity of New Jersey's Higher Education System

A Report to the Governor and Legislature

New Jersey
Commission on
Higher Education

April 1998

HE031446

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The Capacity of New Jersey's Higher Education System

April 1998

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THE CAPACITY OF NEW JERSEY'S HIGHER EDUCATION SYSTEM

INTRODUCTION

The Commission on Higher Education is responsible for long-range planning for higher education in New Jersey. In January 1997, the Commission appointed a blue-ribbon task force to make recommendations called for by the Higher Education Restructuring Act on the need to establish, close, or consolidate higher education institutions in the state. The Blue-Ribbon Task Force on the Capacity of New Jersey's Higher Education System conducted a thorough and objective examination of current and projected higher education needs across the state and presented its report to the Commission in January 1998. The Commission subsequently reviewed, discussed, and considered public input on the report, and based on the fine work of the task force, the Commission provides the following findings to the Governor and Legislature.

FINDINGS AND RECOMMENDATIONS

Capacity Issues

The Commission concludes that there is no need to establish, close, or consolidate higher education institutions in New Jersey. The state's public and independent colleges and universities form a system that efficiently provides broad access to higher education. Some state residents choose to attend college in New Jersey while others choose out-of-state institutions. However, the overall rate of participation in higher education is high compared to other states, as is the overall level of educational attainment, providing the state with an educated citizenry and workforce.

While new higher education institutions are not warranted at this time, there are some specific capacity issues that should be addressed. The northwest (e.g., Sussex and Warren counties), southeast (e.g., Atlantic and Cape May counties), and coastal (e.g., Monmouth and Ocean counties) regions of New Jersey have limited access to postsecondary degree programs, and all three regions are projected to grow in college-age population in the next several years. We recommend institutional collaboration and competitive service delivery models to respond to potential student demand in these areas. Specifically, we suggest the establishment of multi-institution centers by two- and four-year institutions for each of the three regions. The centers should offer collaborative and joint degree programs both on site and through distance learning. These centers may also be helpful in meeting specific statewide programmatic needs as they arise, such as an identified shortage of computer science degrees in relation to projected occupational demands.

Distance learning and instructional technologies also play a critical role in addressing capacity and access issues. New Jersey's colleges and universities are already engaged in distance learning, and the Higher Education Technology Infrastructure Fund will assist the institutions as they expand connectivity and information technology to allow for enhanced distance learning opportunities. Ongoing statewide collaboration in the development of technology infrastructure and an appropriate operational environment for distance learning, including preparation of faculty, is essential to New Jersey's K-12 and higher education systems, as well as to its overall economy.

In order for the higher education system to continue to meet capacity needs, both on campus and through distance learning, increased support for maintenance and renewal of facilities is critical and should take precedence over funding for new construction. While there are periodic programs to assist with capital expenditures, currently there is not sufficient funding to address annual maintenance and renewal needs at the state's senior public institutions.

Outmigration

The issue of outmigration of large numbers of New Jersey high school graduates to attend college has spurred controversy for many years. The state has long provided scholarships to attract additional high-achieving New Jersey high school graduates to attend college in the state, and a new pilot scholarship program was established in 1997. Overall, New Jersey ranks ninth in funding merit scholarships nationally, without considering the new pilot program. Nonetheless, data indicate that a large percentage of students, many of them high-achievers, continue to leave the state to attend college.

Maintaining an educated populace, however, seems unaffected by the outmigration of New Jersey students. The state's level of educational attainment and the quality of the workforce are high despite college student migration patterns, as one might expect given the mobility of today's society.

On the other hand, high-achieving students can favorably impact the quality of colleges and universities, and the vision in *New Jersey's Plan for Higher Education* calls for a higher education system that is among the best in the world. For that reason, enrollment of high-achieving students, along with other facets of institutional quality, should be examined as the higher education system reviews progress toward achieving its vision.

Educational Opportunity

While New Jersey's needs for undergraduate education are being met, economically and academically disadvantaged students and students for whom English is a second language warrant special attention. The Educational Opportunity Fund (EOF), the Tuition Aid Grant (TAG) program, and the Education of Language Minority Students (ELMS) grant program extend access to a significant number of minority and disadvantaged individuals throughout the state. Support for each of these programs should be enhanced to ensure educational access for the growing population in need of such assistance.

Low Enrollment Programs

New Jersey's system of higher education must focus on using scarce resources effectively. An analysis of existing program offerings indicates that there is not unnecessary program duplication among the institutions. There are, however, many low-enrollment programs which warrant a review to determine if they should be continued, phased out, or offered in collaboration with other institutions.

Collaboration and Articulation

New Jersey colleges and universities are involved in a large number of collaborative degree programs and other related activities, which is an indicator of efficient use of resources. The transfer and articulation recommendations, which are under development by the Presidents' Council, also impact the efficiency of the system. By improving articulation between colleges and facilitating the transfer of courses from one college to another, student and institutional time and resources are saved.

NEXT STEPS

In 1996 the Commission on Higher Education and the Presidents' Council collaboratively developed a long-range plan for higher education in New Jersey, *Looking to the New Millennium: New Jersey's Plan for Higher Education*. The plan calls for a periodic review and refinement of recommendations, and the first such review is now underway. Based on recommendations from the Blue-Ribbon Task Force on the Capacity of New Jersey's Higher Education System, the long-range plan review will specifically address the following:

- An examination of the many facets of institutional quality, including the enrollment of high-achieving students, as they relate to realizing the vision for higher education in New Jersey;
- The need for multi-institution centers to address needs and priorities in the northwest, southeast, and coastal regions of New Jersey;
- The need for institutions to justify, combine, or phase out low-enrollment programs; and
- The need to consider periodically state and national reports on occupational demand and supply in relation to long-range planning.

Related ongoing efforts will also respond to the findings and recommendations on capacity. Accountability reports focused on institutional and systemwide efficiency in meeting state needs will continue to inform planning and decision-making. Efforts will continue to increase support for TAG, EOF, and ELMS in order to improve access for students who are economically or educationally disadvantaged or who speak English as a second language. Efforts will also continue to establish a maintenance and renewal funding program for senior public institutions.

In addition, the Presidents' Council will finalize its recommendations on articulation and transfer to improve articulation between colleges and ease student transfer from one college to another. The Council will also develop a plan for regional centers for the higher-order preparation of faculty in the use of technology and distance learning, as called for in the long-range plan. And the Council's and Commission's Higher Education Technology Advisory Committee will continue to develop recommendations for an interconnected technology infrastructure for higher education and an appropriate operational environment for distance learning.

CONCLUSION

The work of the Blue-Ribbon Task Force on the Capacity of New Jersey's Higher Education System provided the Commission with significant and objective information on which to base its conclusions regarding capacity issues. While there is no need to establish, close, or consolidate institutions, there are several capacity-related issues to address. As those issues are considered through long-range planning and by various committees and task forces established by the Commission and Presidents' Council, the information provided in the task force report will continue to be a valuable resource. The full report of the task force follows.

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REPORT AND RECOMMENDATIONS ON THE CAPACITY OF NEW JERSEY'S HIGHER EDUCATION SYSTEM

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Prepared in Consultation with MGT of America, Tallahassee, Florida

OVERVIEW OF STUDY FINDINGS AND SUMMARY OF RECOMMENDATIONS

Background and Purpose of Study

In January 1997, the Chairman of the New Jersey Commission on Higher Education (the Commission) announced the formation of a Blue Ribbon Task Force (Task Force) to evaluate the capacity of the state's higher education system and to make recommendations to the Commission on the establishment, expansion, closure, or consolidation of institutions as mandated by the Higher Education Restructuring Act of 1994. A Request for Proposal was issued by the State of New Jersey in early March 1997, for the purpose of securing a qualified consultant to:

1. assist the Task Force in collecting and analyzing relevant data regarding the demand for and provision of higher education in New Jersey; and based on these analyses
2. propose recommendations and alternatives to the Task Force regarding the effective and efficient provision of higher education in the state.

MGT of America, Inc., was selected by the proposal review team to assist the Task Force in this evaluation effort.

The initial work of the task force focused on collecting public input on these important issues via three public hearings around the state. These hearings were held in the Camden area, Trenton, and Newark in early June. In addition to the public testimony given at these hearings, written testimony was also submitted for consideration by the Task Force.

The work of the Task Force and MGT from July through October focused on the collection and analysis of relevant data and other information regarding the capacity of New Jersey's system of higher education. This overview of the Task Force report provides a summary of major findings and recommendations based on these analyses.

Major Study Findings

The Current Level of Participation in Higher Education Anywhere by New Jersey High School Graduates is High as is the Overall Level of Educational Attainment of New Jersey Residents

Our analysis indicated a number of positive aspects relative to the participation of New Jersey residents in higher education and of the overall degree of educational attainment of New Jersey residents:

- The overall level of participation in higher education anywhere (in state and out of state) by New Jersey high school graduates is well above the national average. More than three-fifths (64.4%) of high school graduates in the state enroll in a college or university somewhere within 12 months of graduation compared with 57 percent of high school graduates nationally.
- The overall level of educational attainment of New Jersey residents is also much higher than the national average. Almost three out of

every ten residents age 25 or older (28.3%) have at least a bachelor's degree compared with 23.6 percent nationally.

In short, New Jersey high school graduates participate in higher education at a relatively high level compared to their peers nationally. Likewise, state residents are well educated compared with those of other states.

From a macro-level perspective, these are very positive signs for New Jersey. The state has a high level of well-educated individuals to meet the current needs of employers in the state. The high level of participation in higher education by New Jersey high school graduates suggests that this pattern of "intellectual capital" development will continue in the future which could also have a positive impact on the state's future level of educational attainment and continued economic growth and development. A related positive indicator for the future is the fact that, assuming a relatively similar pattern of statewide degree production continues in the future, there will be more than enough individuals being granted associate, masters, and first professional degrees relative to the projected annual job openings requiring those levels of education, while there will be a small deficit of bachelors and doctoral degrees granted statewide relative to projected annual job openings. While this should only be viewed as a relative indicator of fit between future labor supply and demand, it is still a positive indication for future economic growth, especially since most of the projected growth in jobs statewide through 2005 is in occupations requiring some form of higher education.

At the same time, it should be acknowledged that a sizable proportion of the higher education received by New Jersey residents is taking place outside of the state. A significant number of high school graduates leave the state each year to attend colleges and universities in other states, which is likely due to the relatively high level of income enjoyed by state residents and the proximity of New Jersey to a number of higher education institutions in New York, Pennsylvania, Delaware, and other eastern seaboard states. Data also suggest that many of these students have high levels of academic achievement (e.g., high SAT scores), which would also contribute to out-migration given that high-achieving students typically have more higher education options to choose from (in and out of state). Likewise, the relatively high level of educational attainment of state residents is due in part to New Jersey's status as a net "importer" of individuals with college degrees. In fact, New Jersey itself has a below average level of degree production relative to its population.

While some may interpret these below average indicators to mean that the state's current system of higher education does not adequately meet the needs of state residents, we believe that an equally valid interpretation is that the educational needs of the state and individuals are largely being met through the current scenario. Given the mobility of our society, state systems of higher education can't be viewed as "closed systems" to serve or capture every potential student in the state. Many of those states that followed the closed system philosophy and built large numbers of colleges and universities to serve state residents are now faced with situations where some of these institutions are not economically viable due to low enrollments and other inefficiencies and/or state resource constraints. New Jersey, on the other hand, has followed a more "open system" philosophy of meeting higher education needs which seems to have been successful in addressing participation in higher education and promoting educational attainment in the state — two key goals of any state system of higher education.

Nevertheless, the issue of outmigration, particularly of high-achieving students, remains a concern to many. The Task Force heard extensive testimony on this issue at its second round of public hearings in December, and deliberated on it at some length.

While the Task Force continues to believe that New Jersey's overall level of educational attainment and quality of its workforce are not harmed by the outmigration of these students, it acknowledges that the enrollment of high-achieving students can favorably impact the quality of colleges and universities. New Jersey currently ranks ninth nationally in its funding of merit scholarships. The state has for some time contributed $7.5 million annually for this purpose, and in Fall 1997 initiated a pilot project that provided an additional $3.0 million for the 1997/98 academic year to recruit academically superior, freshmen students. One hundred and eighty-seven (187) additional students were recruited at a cost of $16,275 per merit scholarship for Fall 1997. It is not clear that additional dollars alone will attract these students.

The Task Force's charge focused on the capacity of New Jersey's higher education system, not its quality; however, concerns about this issue prompt the recommendation that the Commission on Higher Education, working with the Presidents' Council, may wish to examine the many facets of quality necessary to achieve the vision for higher education articulated in *New Jersey's Plan for Higher Education*, which states that "New Jersey's system of higher education aspires to be among the best in the world..." The enrollment of high-achieving students is one measure of that quality.

There Are Some Pockets of Potential Demand Within the State

Despite these very positive findings, our analysis did indicate pockets of low access to degree programs for some individuals in the state — specifically in the northwest, southeast, and coastal regions. These also happen to be among the only regions in the state with a projected growth in college age population over the next several years. As suggested by the one individual during the public hearings, this could be addressed through the establishment of new public institutions. However, we do not believe that the establishment of any new institutions is warranted at this time. In addition to the fact that statewide enrollment has actually declined during the past few years (with no reduction in institutional capacity), the time and cost involved in establishing new institutions would still not address these more immediate access needs. Further, if past history is any gauge of the future, there is no guarantee that students from these (or other regions) would decide to attend, even if new institutions were established. Instead, we feel that these needs can be met through the current system through institutional collaboration and competitive service delivery models in responding to potential student demand.

Likewise, we found examples of some more specific potential needs that could also be met through the state's system of higher education. Three areas that need specialized consideration include the increasing diversity of the population a growing number of economically and academically disadvantaged students and large numbers of students who use English as a second language. While we found that two of the state's primary mechanisms for meeting the needs of these students — the Educational Opportunity Fund (EOF) and Tuition Aid Grants (TAG) — currently extend access to higher education for minority, academically and economically disadvantaged students, the growing number of these students in New Jersey higher education as well as the projected continued growth in the state's non-white population indicate a need to enhance these and other related mechanisms in the future.

The third potential area of specialized need pertains to those residents who use English as a second language. Our analysis found that one-fifth or more of households in 11 of New Jersey's 21 counties do not use English as their primary language at home. Concerns were also raised during the public hearings related to the diminishment of support for ESL students, many of whom are placebound.

A final specific programmatic need is in the area of computer science, where we found that there are areas of the state which have low access to computer science programs. This is consistent with related concerns that were mentioned during the public hearings and testimony process of this study. We also found that the overall number of computer science degrees granted statewide on an annual basis is not sufficient to meet projected demand in related occupational fields.

New Jersey's Higher Education Delivery Structure is Generally Efficient

One of the major issues of this study was the efficiency with which higher education is provided by New Jersey's system of higher education. Our findings on the efficiency of the system were generally positive:

- New Jersey does not appear to have a surplus of institutions relative to its population when compared to other states.
- Virtually all public institutions are operating at cost effective enrollment levels.
- Program duplication is very low — the vast majority of specific degree programs are offered by 25 percent or fewer of the eligible institutions at each degree level.
- Instructional collaboration and cooperation is high — more than 70 degrees or certificates are offered through "joint" or "cooperative" activities between two or more New Jersey institutions of higher education.
- Instructional space (e.g., classroom facilities) utilization is in line with national utilization standards suggesting an efficient use of space by the state's colleges and universities.

As an aside, we feel that the current pattern of reasonably optimal facilities utilization suggests a need to have a systemic program of ongoing facilities maintenance and renovation for New Jersey colleges and universities if this pattern is to continue in the future. More specifically, we believe that funding maintenance and renovation should take precedence over funding for new construction.

There were, however, some potential areas of concern related to efficiency that should be noted:

- Two community colleges (Salem and Warren County) have enrollment levels that are below the point at which research suggests that "economies of scale" are fully realized for two-year institutions (1,000 to 1,500 FTE).
- There were a large number of "low enrollment" degree programs at the undergraduate and graduate levels (defined as 25 or fewer majors at the undergraduate level and 10 or fewer majors at the graduate level) in both Fall 1992 (541) and Fall 1995 (668).

- Numerous concerns were raised during the public hearings process regarding the transfer articulation of community college students to senior institutions. These concerns are given added credibility due to the fact that the Presidents' Council is actively studying this issue.

While these issues are not insignificant, we believe that they should not overshadow the other very positive indications of efficiency mentioned previously. Rather, we believe that these three issues could be addressed effectively through corrective action within the current system that could also be used in some ways to address the regional access needs described earlier. For example, Salem and Warren County colleges are also located in or near the regions where there has been low access to higher education for some individuals, which suggests that any potential unused capacity at these institutions could be used to help meet these regional access needs at little or no additional cost to these two institutions.

Specifically, we recommend the establishment of "multi institution centers" in the northwest (e.g., Sussex and Warren counties), southeast (e.g., Atlantic and Cape May counties) and coastal (e.g., Monmouth and Ocean counties) areas of the state to offer associate, bachelors, and graduate level instruction to placebound residents (e.g. working adults). Such centers could involve partnerships between two- and four-year institutions (public, private, and proprietary) to offer collaborative and joint degree programs on site through distance learning, providing "one-stop" shopping for students. In addition to meeting more general regional higher education needs, this model would also help meet more specific programmatic needs such as the computer science example mentioned earlier, as well as helping to address the continuing education needs of working adults, which was also mentioned as a "need" during the public hearing process.

We further recommend that the programs that are offered at these centers be selected and delivered via a market mechanism such as a bidding process among institutions to encourage competition and facilitate the most effective and efficient delivery of services to students. This is not unlike the mechanisms used to establish and provide "contract training" courses offered by community colleges to private industry or continuing education programs offered by universities to working professionals. This would require the use of existing staff to coordinate this competitive delivery of services to students.

These "centers" could be established at a host institution such as a community college, at a high school, or in other available commercial space. A specific recommendation as to the locations of these centers is beyond the scope of this study, although we recommend that they be located centrally within these regions, and near major transportation networks to optimize access.

This model would have a fiscal impact for participating institutions. In addition to the direct costs of hiring additional faculty to teach the necessary courses students would require academic and student support functions such as advising, registration and records, adequate library facilities, and computing support. Also, an overarching cost would be incurred in coordinating the services provided at these centers, especially if there were an environment of market competition for delivering the services. The goal is to foster and encourage institutional cooperation, using the existing structure and student demand for determining programs.

The existing resources of participating institutions would help partially defray any additional cost of providing these services. Related to this is our finding that there is currently a pattern of reasonably optimal facilities utilization by New Jersey institutions, which suggests a need to have a systematic program of on-going facilities maintenance and renovation for colleges and universities in the state, especially if existing institutions are used to deliver services via the multi-institution center model. Additionally, there are two institutions located in these regions — Salem and Warren community colleges — that have low enrollment levels (see Section 5-5 of Chapter 5.0) which suggest potential unused capacity that could be used for this purpose at little or no additional cost to these institutions.

The Environment for Distance Learning and Instructional Technologies is Positive

A majority of New Jersey institutions also extend access to higher education for state residents through distance learning technologies. Our evaluation of the current status of distance learning and instructional technology usage by New Jersey institutions indicated a large and growing utilization of these modes of instructional delivery, primarily via video tape and interactive video classrooms.

We commend the work of the Higher Education Technology Task Force, whose recent recommendations provide a useful starting policy framework for distance learning and instructional technology initiatives within the state. However, in implementing the recommendations of the Higher Education Technology Task Force, we urge the Commission and the Presidents' Council to create a regulatory environment that maximizes quality but does not put cumbersome mechanisms in place for New Jersey institutions regarding the offering of distance learning-based courses and programs. Because this is such a rapidly growing national and international marketplace, New Jersey colleges and universities could be placed at a competitive disadvantage relative to out-of-state providers if they do not have the flexibility to respond to consumer (i.e., state residents and employers) demand in a timely and efficient manner.

We also urge the Presidents' Council to continue to closely monitor this emerging pedagogical area to see what incentives (e.g., faculty/staff training, technical support) might be necessary in order to ensure the effective and efficient use of these technologies for learning, and develop proposals for those incentives where appropriate. The Higher Education Technology Task Force recognized this by recommending that faculty and staff training and development in technology needs to be made a high priority for the state.

Summary of Recommendations

Our basic finding is that New Jersey's existing system of higher education is well placed to meet the future needs of the state with some minor modifications and initiatives. Our recommendations are organized according to our intended audience:

Recommendation to the State:

- The state should address both regional and specific higher education needs through collaborations among existing institutions via a "multi-institution center model," which would deliver the necessary programs and services through institutional collaboration to individuals using both on site and distance learning-based instruction.

Recommendation to the Commission:

- The Commission should work with the state to ensure that support for programs for minority, academically, and economically disadvantaged students (including the Educational Opportunity Fund, Tuition Aid Grants, and programs for ESL students) is enhanced in the future.
- The Task Force believes that the recruitment and retention of high achieving students, from both New Jersey and other states, can favorably impact the quality of New Jersey colleges and universities and supports the current generous level of funding for merit scholarships. However, the findings of the study do not indicate that outmigration negatively affects the state's level of educational attainment or its ability to hire qualified employees, and it is not clear that additional dollars alone will significantly increase the enrollment of high-achieving students. Nevertheless, because the quality of the system was not an area examined by the Task Force, the Commission working with the Presidents' Council, may wish to examine the many facets of quality necessary to achieve the vision for higher education articulated in *New Jersey's Plan for Higher Education*, which states that "New Jersey's system of higher education aspires to be among the best in the world." The enrollment of high-achieving students is one measure of that quality.
- The Commission should request each institution's governing board to justify low enrollment programs (those with 25 or less students at the associate and baccalaureate levels and 10 or less at the graduate level) or they should be phased out or offered in collaboration with other institutions.
- The Commission should work with the state to establish an ongoing program of building maintenance and renewal for the state's colleges and universities. Funding for building maintenance and renewal should take precedence over funding for new construction.
- The Commission should strive to develop an operational environment for distance learning that maintains quality while reducing barriers to access and dissemination to programs.

Recommendations to the Presidents' Council:

- The Presidents' Council should develop and recommend to the Commission a coordinated statewide transfer and articulation policy for community college students.
- The Presidents' Council should develop and propose incentives regarding the efficient and effective use of distance learning and instructional technologies (e.g., faculty and staff training.)

We believe that these modifications and initiatives will help enable New Jersey's system of higher education to be well placed for the demands of the future.

1.0 OVERVIEW

1.1 An Overview of New Jersey's Higher Education System[1]

New Jersey's system of higher education is comprised of 56 degree-granting public and private institutions. Within this total, there are four distinct sectors:

- Public Research Universities - 3
- State Colleges and Universities - 9
- Community Colleges - 19
- Independent Colleges and Universities - 25

The independent colleges and universities can be further differentiated into 14 with a public purpose (those that receive direct state support and whose students receive state financial aid), eight specialized religious colleges, and three proprietary institutions licensed to grant associate degrees.

New Jersey institutions enrolled over 328,000 students in Fall 1996 (see Exhibit 1-1). Approximately 85 percent of all enrollments were at the undergraduate level, and almost one-half of the undergraduate enrollments were in the community colleges. Approximately one-quarter were at the state colleges and universities with the remainder divided relatively equally between the public research universities and independent institutions. More than nine out of every ten undergraduates throughout the system are New Jersey residents.

EXHIBIT 1-1
HEADCOUNT ENROLLMENT IN NEW JERSEY HIGHER EDUCATION
BY SECTOR, FALL 1996

Level	Pub. Research Universities	State Coll. & Universities	Community Colleges	Independent Institutions	Total
Undergraduate	40,853	66,242	127,103	45,174	279,372
% by Sector	14.6	23.7	45.5	16.2	100.0
Graduate & Prof.	19,210	11,188	-	18,359	48,757
% by Sector	39.4	22.9	-	37.7	100.0
Total	**60,063**	**77,430**	**127,103**	**63,533**	**328,129**
% by Sector	**18.3**	**23.6**	**38.7**	**19.4**	**100.0**

Source: New Jersey Commission on Higher Education - Fall 1996 IPEDS Enrollment Survey.

New Jersey institutions also awarded almost 51,000 degrees and certificates in 1995-96. Approximately one-half (24,600) were baccalaureate degrees, 13,000 were at the associate level, 8,500 were at the masters level, 2,800 were at the doctoral and professional levels, and over 2,000 certificates were awarded.

1.2 Overview of the Report

The purpose of this report is to provide the Task Force with a synthesis of the relevant data analyses conducted by MGT during the course of this engagement and our resulting policy recommendations. The remainder of this report is organized into five chapters:

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[1] This topic is covered in significant detail in Chapter 5.0.

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- **National Comparisons (Chapter 2.0)**: Contains comparisons between New Jersey and the rest of the nation on a number of higher education indicators and an overall assessment of New Jersey's higher education delivery system.
- **Summary of Public Hearings (Chapter 3.0)**: Provides a summary of the major issues raised in the three public hearings held in June, and three additional hearings held in December, as well as other written testimony that was submitted.
- **Indicators of Demand for Postsecondary Education in New Jersey (Chapter 4.0)**: Addresses the primary drivers and indicators of demand for higher education (e.g., demographic and economic trends), and the likely impact of these drivers on future demand for higher education in New Jersey.
- **Issues of Postsecondary Education Supply and Access (Chapter 5.0)**: Focuses on the current "supply" of higher education in New Jersey, and access to the system.
- **Recommendations (Chapter 6.0)**: Provides recommendations for the consideration of the Commission based on the data and findings in the previous chapters.

The following two points should be kept in mind in reading this study:

- The data are presented at a county level where available and appropriate.
- We have sought to obtain the most recent (and applicable) data available. Efforts have been made to keep analytical timespans and frameworks consistent throughout this report, however there is some variance depending on the recency, availability, and available detail of specific data.

2.0 NEW JERSEY'S SYSTEM OF HIGHER EDUCATION: THE NATIONAL CONTEXT

Higher education is both a social and a private good, contributing to the development of both society in general and individuals. Without a doubt, the rapid growth in higher education opportunities in the United States since the end of World War II has been one of the significant drivers of social development and economic growth in this country. Higher education itself has been estimated to account for approximately 25 percent of economic growth in the United States due to its positive effects on income as well as its important contributions to improvements in knowledge (i.e., research) and its application to industry, commerce, and social welfare.[1] In addition to these monetary benefits, higher education provides many non-monetary benefits to society and individuals through the preservation and advancement of knowledge, cultural and community enrichment, and the self-actualization of educational goals.

The relationship between higher education and these economic and societal outcomes is complex and interactive. Clearly, the ability for New Jersey (and other states) to be a competitive force in the 21st century is directly related to the availability of the necessary "intellectual capital" to fuel the state's continued growth and development. In order to provide a national context for this report and the related policy issues, this chapter contains comparisons between New Jersey and other states on a number of higher education indicators:

- number of institutions by type:
- participation in higher education (i.e., enrollment); and
- number of degrees conferred by level.

In order to make these comparisons meaningful, the raw data were divided by the number of 100,000 working age persons (i.e., the population between the ages of 18 and 64) in each state. This provided figures that could be compared more meaningfully without accounting for state size differences.

2.1 Higher Education Institutions

Exhibit 2-1 shows the number of institutions by type, per 100,000 working age population (W.A.P.), for New Jersey and the nation, as well as the range among the states. Nationally, the average number of total institutions is 2.3 per 100,000 W.A.P., comprised of 1.6 public and 0.7 private institutions. As indicated, New Jersey is well below the national averages for both public and private institutions with 1.1 institutions per 100,000 W.A.P, or 48 percent of the national average. The total number of institutions per W.A.P. among the states range from a high of 5.4 (Vermont) to a low of 0.7 (Nevada).

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[1] Source: P.T. Brinkman and L.L. Leslie. The Economic Value of Higher Education. New York: Mac Millan Publishing, Inc., 1988.

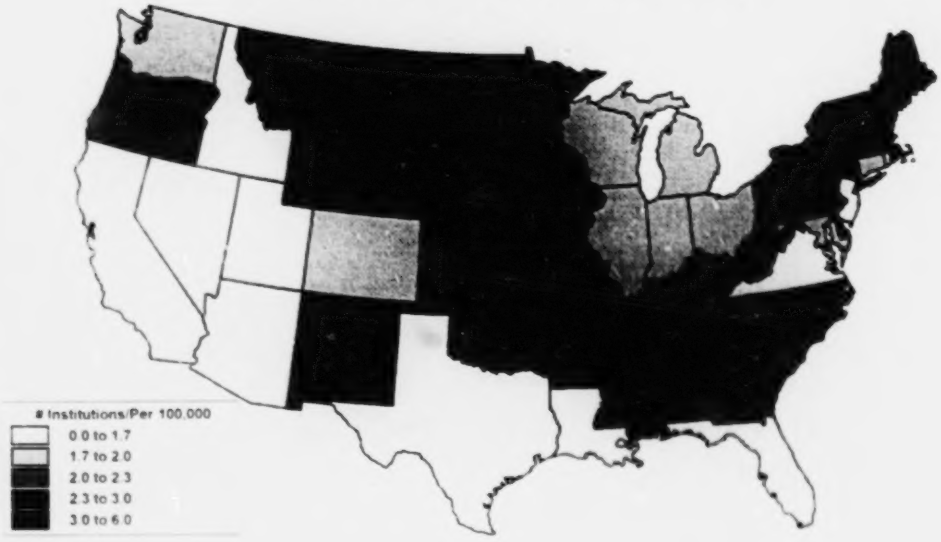
EXHIBIT 2-1
NUMBER OF INSTITUTIONS BY TYPE PER 100,000 WORKING AGE POPULATION NEW JERSEY AND NATIONAL AVERAGE

	Public 4-Year	Public 2-Year	Public Total	Private	Grand Total
NEW JERSEY	0.3	0.4	0.7	0.4	1.1
National Average	0.5	1.0	1.6	0.7	2.3
NJ as % of Average	**60%**	**40%**	**44%**	**57%**	**48%**
50 State High	1.9	3.8	5.2	2.4	5.4
High State	*SD*	*VT*	*VT*	*WY/ND*	*VT*
50 State Low	0.1	0.1	0.3	0.2	0.7
Low State	*FL*	*NV*	*WY/NV*	*LA/SD*	*NV*

Source: National Center for Education Statistics, IPEDS, 1995; U.S. Census, 1995.
Note: Working age population includes persons 18-64 years of age.

Exhibit 2-2 displays the same information for all states in a geographic form. This reveals that the states with the greatest number of institutions per 100,000 working age population are clustered geographically. As indicated, the midwest shows a concentration of institutions with 3.0 to 6.0 per 100,000 as does northern New England while in comparison to its neighbors, New Jersey is below the rest of the mid-Atlantic region in the overall number of institutions per 100,000 W.A.P.

EXHIBIT 2-2
TOTAL NUMBER OF INSTITUTIONS PER 100,000 WORKING AGE POPULATION



These data should not be necessarily taken as a definitive indicator that New Jersey has too few institutions to meet the higher education demands of its residents. In fact, this is an indication that New Jersey does not have a surplus of institutions relative to the size of its college age population. A more basic question is the relative level of participation in higher education given existing higher education capacity. These data are presented in the next section.

2.2 Participation in Higher Education

Exhibit 2-3 shows statewide participation (as measured by student enrollment), per 100,000 W.A.P., for New Jersey and the national average as well as the range among the states. Nationally, there is an average of 9,069 students per 100,000 W.A.P. in each state, with 4,588 in the lower division, 3,133 in the upper division, 1,145 in graduate programs, and 203 in first professional programs. As the exhibit shows, New Jersey's overall level of participation is 25 percent below the national average. At the various levels, this ranges from 22 percent below at the lower division undergraduate level to 33 percent below at the first professional level.

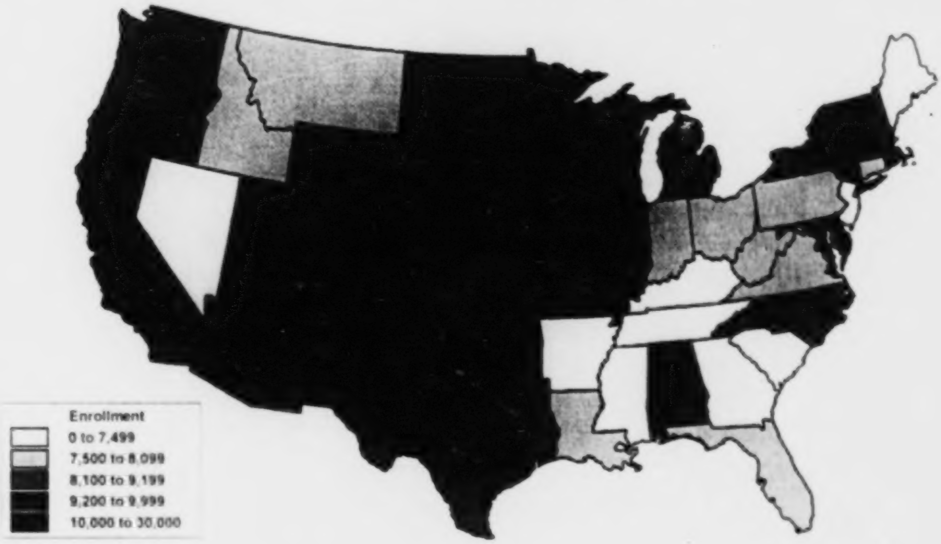
EXHIBIT 2-3
ENROLLMENT BY STUDENT LEVEL PER 100,000 WORKING AGE POPULATION
NEW JERSEY AND NATIONAL AVERAGE

	Lower Division	Upper Division	Graduate	First Professional	Overall
NEW JERSEY	3,575	2,191	877	135	6,778
National Average	4,588	3,133	1,145	203	9,069
NJ as % of Average	78%	70%	77%	67%	75%
50 State High	7,282	5,242	2,097	395	12,885
High State	*UT*	*AZ*	*MA*	*IA*	*UT*
50 State Low	2,236	1,781	419	0	6,509
Low State	*AK*	*GA*	*AK*	*AK*	*AR*

Source: National Center for Education Statistics, IPEDS, 1995; U.S. Census, 1995.
Note: Working age population includes persons 18-64 years of age.

Exhibit 2-4 shows the total number of enrolled students per 100,000 working age population on a state by state basis. In this graphic the midwest shows a higher level of participation than any other area in the country, while New Jersey is below all other states in the mid-Atlantic region.

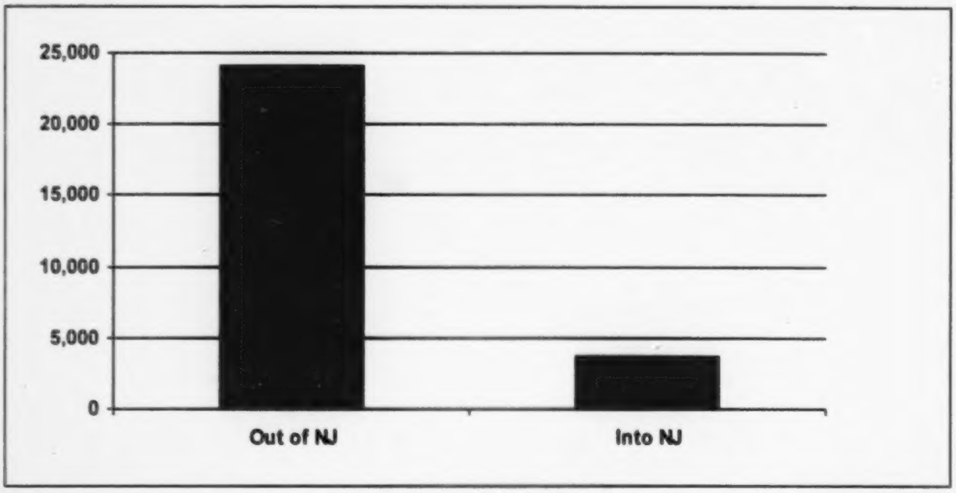
EXHIBIT 2-4
TOTAL STUDENT ENROLLMENT
PER 100,000 WORKING AGE POPULATION



2.3 *Migration Patterns of New Jersey Students*

Part of the reason for the comparatively low college participation rate within the state is likely due to a significant level of outmigration by New Jersey residents to attend college and a low level of inmigration of students from other states. (See Exhibit 2-5). This high level of outmigration could be due to a number of factors including the close proximity to other states in the region which have relatively large systems of higher education (e.g., Pennsylvania, New York) or personal reasons. New Jersey's relatively high level of disposable income per capita (2nd highest in the U.S.) may also make these out-of-state institutions a more affordable option for New Jersey families than in states with lower levels of wealth. Interestingly, Connecticut (which has the highest level of disposable income per capita) also has a high level of outmigration, which provides additional evidence for the relationship between wealth and the affordability of out of state colleges and universities.

EXHIBIT 2-5
MIGRATION OF ALL FRESHMEN STUDENTS OUT OF/INTO NEW JERSEY
FALL 1994



Source: National Center for Education Statistics "Digest of Education Statistics, 1996" Table 199.

2.4 Degrees Conferred

Exhibit 2-6 shows the number and type of degrees conferred for New Jersey and the nation as a whole, per 100,000 working age population. As the exhibit shows, New Jersey falls well below the national average in degrees and certificates conferred per 100,000 W.A.P — almost 40 percent below the average. At the various degree levels, New Jersey ranges from 16 percent below the average in terms of doctorates conferred to 36 percent below the average for baccalaureates conferred. This is partially to be expected given the relatively low enrollment numbers presented earlier.

Given that the United States is a mobile society, degree production cannot be examined absent the migration (in and out) of college graduates from the state. Data published in a report by the state Department of Labor indicates that the state had more individuals coming into the state with college degrees than leaving between 1985 and 1990. Thus while the state may not produce high levels of degrees, it partially offsets this by "importing" colleges graduates.

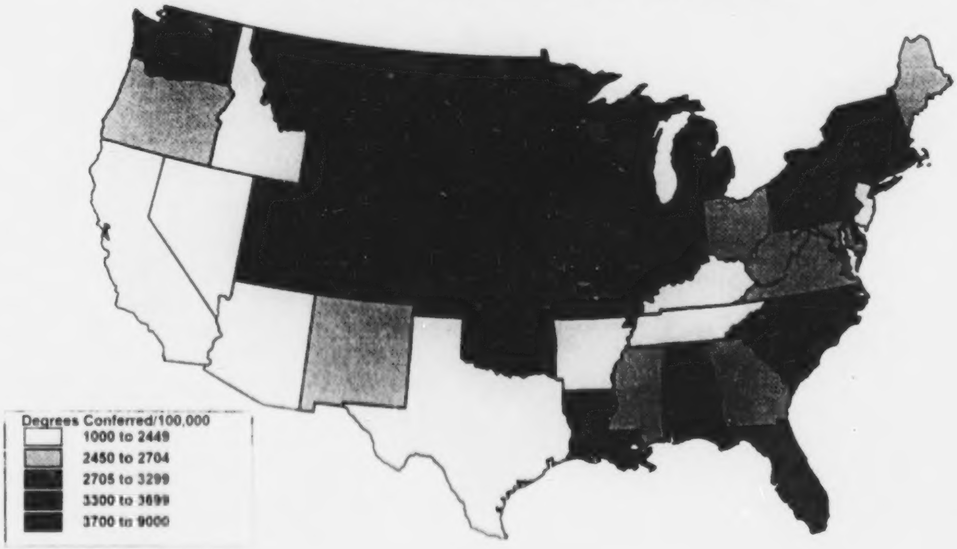
EXHIBIT 2-6
DEGREES AND CERTIFICATES AWARDED BY INSTITUTION TYPE ACROSS THE STATES
PER 100,000 WORKING AGE POPULATION

[redacted]	New Jersey	National Average	NJ as % of Average	50 State High	[redacted]	50 State Low	[redacted]
[redacted]	502	615	82%	1,492	[redacted]	237	[redacted]
[redacted]	996	1,547	64%	3,013	[redacted]	390	[redacted]
[redacted]	338	507	67%	1,080	[redacted]	241	[redacted]
[redacted]	43	51	84%	120	[redacted]	10	[redacted]
[redacted]	68	102	67%	198	[redacted]	0	[redacted]
[redacted]	36	350	10%	3,369	[redacted]	36	[redacted]
[redacted]	13	29	45%	127	[redacted]	0	[redacted]
[redacted]	1,996	3,202	62%	6,920	[redacted]	1,572	[redacted]

Source: National Center for Education Statistics, IPEDS, 1995; U.S. Census, 1995.
Note: Working age population includes persons 18-64 years of age.

Exhibit 2-7 shows the total number of degrees conferred in 1995 in each state, per 100,000 working age population. As can be seen, the center of the country had the highest concentration of degrees awarded, as one might expect from the previously noted high number of institutions and college participation in those states. Middle New England also had a high concentration of degrees awarded, which is also attributable to the relatively high number of institutions available for students in those states. In comparison to its mid-Atlantic state neighbors, New Jersey had a low number of degrees conferred per 100,000 working age population.

EXHIBIT 2-7
TOTAL DEGREES CONFERRED ACROSS THE STATES
PER 100,000 WORKING AGE POPULATION



2.5 Summary of National Comparisons and Further Analysis of New Jersey's Higher Education Capacity, Participation and Attainment

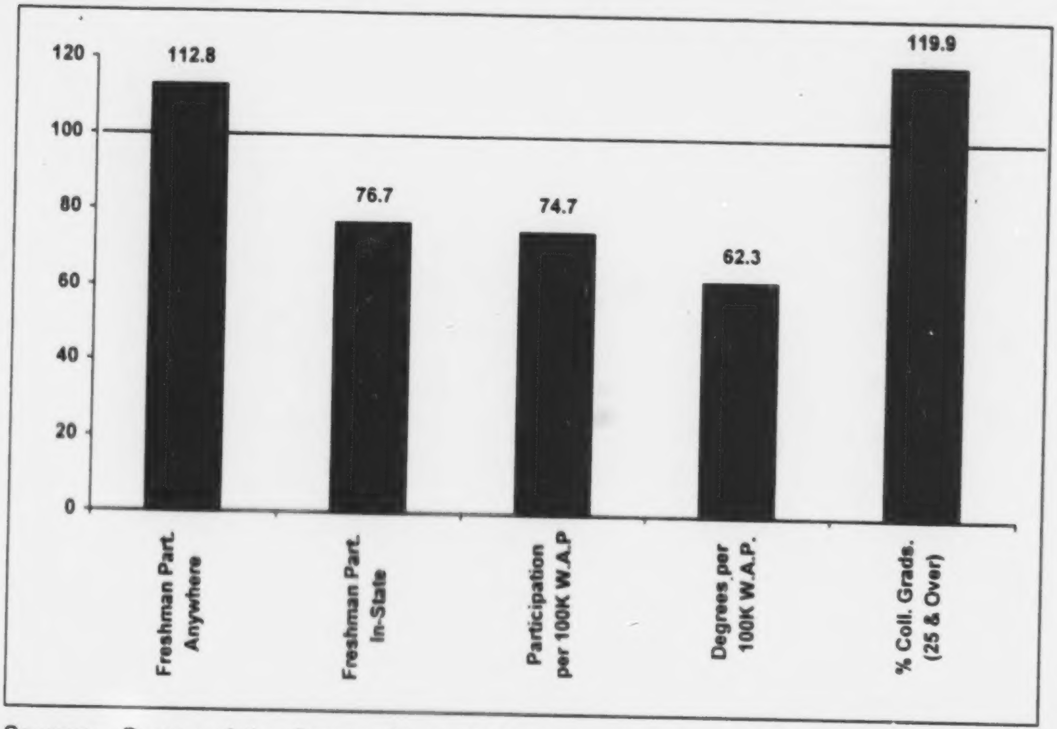
There are various facets to the issue of higher education capacity for the state of New Jersey. Two facets previously discussed in this chapter are the issues of institutions and participation within the state, in which New Jersey ranks below the national average. However, the issues of overall participation of New Jersey residents in higher education (in- and out-of-state), as well as the ultimate level of higher education attainment within the state's population provide another perspective on capacity.

Exhibit 2-8 provides a comparison of various measures of New Jersey's higher education participation and attainment relative to the national average:

- The percent of high school graduates enrolling in higher education anywhere as new freshmen (freshman participation anywhere) within 12 months of graduation
- The percent of high school graduates enrolling in higher education in-state as new freshmen within 12 months of graduation
- Higher education enrollment (i.e., participation) per 100,000 W.A.P.
- Higher degrees and certificates produced per 100,000 W.A.P.
- The percent of state residents aged 25 or older with a baccalaureate degree or higher.

For comparison purposes, these measures have been converted to a standard index where 100.0 equals the U.S. average given that the measures are based on different metrics. As indicated, New Jersey compares favorably with the rest of the nation in the percent of high school graduates enrolling anywhere as new freshmen as well as the percent of state residents with a college degree.

EXHIBIT 2-8
NEW JERSEY'S HIGHER EDUCATION PARTICIPATION AND ATTAINMENT COMPARED TO THE NATIONAL AVERAGE
(National Average = 100)



Sources: Bureau of the Census, March 1996; National Center for Education Statistics, 1996 Digest of Education Statistics.

These data provide an interesting perspective on the question of New Jersey's higher education capacity. On one hand, New Jersey high school graduates have a relatively high level of participation in higher education anywhere (which is likely related to the relatively high level of personal income enjoyed by state residents and the proximity of out-of-state institutions). Also, New Jersey residents are relatively well educated as measured by the proportion of adults with a college degree despite the state's below average level of degree production. This is likely related to the state's status as a net "importer" of individuals with college degrees as previously described in Section 2-4 (which also contributes to the relatively high level of personal income). Unfortunately, the available data do not permit us to analyze whether these in-migrants are returning New Jersey natives. The State may want to consider developing a mechanism (e.g., via drivers license applications) in the future for tracking whether in-migrants are returning natives if this question is seen to be important.

On the other hand, the participation of New Jersey high school graduates in-state as new freshmen as well as the overall participation of New Jersey residents in-state is below the national average for those measures. This clearly reflects the high rate of outmigration of New Jersey students. Not surprisingly, New Jersey greatly exceeds the national average in out-of-state participation in higher education by its high school graduates (139% of the national average).

In summary, these data suggest that while significant numbers of students may not stay in-state to attend college and while degree production is below average, the overall level of educational attainment within the state has not been affected. If the question of capacity is viewed from a human capital/economic development perspective, then these data indicate that the state is well poised for economic growth from the supply side in terms of the participation of the state's high school graduates in higher education and in having a well-educated populace.

However, some may interpret New Jersey's below average number of institutions, overall participation and degree production to mean that the state's current system of higher education does not adequately meet the needs of state residents. We believe that an equally valid interpretation is that the educational needs of the state and individuals are largely being met through the current scenario. Given the mobility of our society, state systems of higher education can't be viewed as "closed systems" to serve or capture every potential student or need in the state. Many of those states that followed the closed system philosophy and built large numbers of colleges and universities to serve state residents are now faced with situations where some of these institutions are not economically viable due to low enrollments and other inefficiencies and/or state resource constraints. New Jersey, on the other hand, has followed a more "open system" philosophy of meeting higher education needs which seems to have been successful in addressing access to higher education and promoting educational attainment in the state — two key goals of any system of higher education.

The major policy questions then, are whether New Jersey's system of higher education is poised to meet the future needs of the state (including those of traditional students, non-traditional students, and the workforce), if there are current pockets of low access within the state that need to be addressed, and if the overall higher education delivery system in the state is efficient. These issues of "demand" and "supply" undergird the rest of this report.

3.0 SUMMARY OF PUBLIC HEARINGS AND OTHER TESTIMONY REGARDING THE CAPACITY OF NEW JERSEY'S HIGHER EDUCATION SYSTEM

3.1 Overview of Hearings

The Task Force on the Capacity of New Jersey's Higher Education System (Task Force) held three public hearings as part of its study in early June 1997 to seek input regarding the proper size and structure of the higher education system and its capacity to meet the needs of New Jersey and its residents. Public notice of the hearings was given in a press release on May 6, as well as via other established lines of communication.

A second round of hearings occurred following issuance of a draft report of the Task Force findings in November. On November 19, 1997, a press conference announced the findings and recommendations. Members of the Task Force spoke with the press about the draft report and announced three public hearings in December to gather feedback on the draft report.

Exhibit 3-1 below shows the date and location of the three hearings as well as the number of individuals who spoke to the Task Force:

EXHIBIT 3-1
PUBLIC HEARING DATES, LOCATIONS, AND SPEAKERS

Date and Time	Location	Number of Speakers
Thursday, June 5 7:00 PM to 9:00 PM	Camden County College, Blackwood	4
Monday, June 9 10:00 AM to Noon	Edison State College, Trenton	13
Tuesday, June 10 2:00 PM to 4:00 PM	UMDNJ, Newark	9

Three additional public hearings were held as described in Exhibit 3-2.

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EXHIBIT 3-2
DECEMBER PUBLIC HEARING DATES, LOCATIONS, AND SPEAKERS

Date and Time	Location	Number of Speakers
December 3 2:00 PM to 4:00 PM	DeVry Institute North Brunswick	13
December 10 10:00 AM to Noon	NJIT/Burlington County College Mt. Laurel	21
December 11 5:00 PM to 7:00 PM	Rutgers University Newark	21

Various members of the Task Force were present at each hearing to convene the meetings and take testimony from the public (3-4 members at each hearing, plus the Executive Director of the Commission on Higher Education who is an ex-officio, non-voting member.)

In addition to the oral testimony given at the public hearings, numerous individuals submitted written testimony to the Task Force outside of these hearings.

3.2 Major Testimony Themes and Issues - June Hearings

Although the purpose of the hearings was to collect information on any related issue, the task force especially requested testimony from the public on three broad questions:

- Are there unmet or under-met regional or statewide academic program or degree level needs based on student and workforce demands?
- Is there a need to establish, expand, close, or consolidate higher education institutions?
- Are additional educational options needed in New Jersey in order to retain more of the state's high-achieving students and attract similar students from out of state?

The following sections summarize the major themes and issues pertaining to each of these three questions that emerged from both the oral and written testimony.

Unmet/Under-met Academic Program and Degree-Level Needs. There were a number of unmet or under-met needs cited in the testimony. The first need cited centered on the ability of community college students to transfer to a public four-year institution in the state or otherwise complete the baccalaureate. There were numerous concerns raised regarding this issue, including problems with the transferability of credits and the distance some community college students in the state have to travel to complete their undergraduate education at a public four-year institution. One suggestion offered was to develop partnerships with the various public four-year institutions in the state to offer baccalaureate completion programs in specific degree areas either at the four-year campus or on site at the community college via distance learning. The representative of one community college (Burlington County) reported that his institution had such partnerships in place with NJIT and UMDNJ.

A second need cited was improving the preparation of students to enter the workforce. This need was broadly applied to all degree areas and focused on basic skills (verbal, written, and quantitative), problem-solving skills, critical thinking, and the ability to work as part of a team. Some of those giving testimony felt that not enough attention was given to teaching students these types of skills. One speaker cited a 1995 study in which employers were surveyed about the quality of New Jersey college graduates. According to the speaker, those employers surveyed expressed "significant concerns" about the basic skills of these graduates, and three out of four employers find it necessary to provide basic skills training for their college-educated employees.

A third, related, need cited was in the area of continuing education and lifelong learning for working adults. Various speakers noted the link between an educated workforce and a high performing economy. Again, one speaker noted that many employers were looking outside of the state's system of higher education (e.g., private sector training and development companies) in order to provide these opportunities to their employees.

There were only two specific programmatic area needs noted in either the oral or written testimony. The first need cited was for additional graduates and graduate programs in speech language pathology. A representative from Gloucester County noted that there was such a severe shortage of qualified professionals that the county contracted with West Chester University in Pennsylvania to provide distance learning classes in speech pathology within the county. One individual who submitted written testimony on this same issue noted that she was unable to complete her training in this field due to the severely limited number of spaces in New Jersey graduate programs in speech pathology (seven applications for every one space).

The second need cited centered on high technology degree fields. Written testimony was submitted by a state legislator noting a concern that "sufficient access to degrees in high technology fields such as computer science and engineering is not being provided at either the state or regional level."

Establish, Expand, Close, or Consolidate Institutions. There were numerous regional needs cited in testimony for the establishment or expansion of institutions. The southern part of the state was noted repeatedly as lacking sufficient capacity as was the northwestern area of the state. One speaker specifically noted that Cape May County was the only county in the state with no higher education institution. He mentioned that there were current efforts underway to partner with one or the other existing community colleges in Atlantic or Cumberland County in order to begin to meet the needs of Cape May County residents.

Another speaker noted that the northwestern part of the state was the only region of the state with no public four-year institution. A high school guidance counselor from that same part of the state submitted written testimony suggesting that the County College of Morris be allowed to offer bachelor's degrees as well as associate degrees so that students from northwest New Jersey could complete their undergraduate degrees without having to leave the area.

There was a specific suggestion to establish a new university that would be in some respects a peer to Rutgers - a "Garden State University." This institution, unlike

Rutgers, would have a special educational and service niche (not research); in addition, it would work with existing institutions and the private sector and attract those talented students who would otherwise leave New Jersey.

There were no recommendations for institutional closure, although one individual suggested that Rutgers and UMDNJ should be merged, given that in her opinion single purpose institutions such as UMDNJ were contrary to the trend toward interdisciplinary training in the health professions.

Additional Educational Options to Retain New Jersey Students. In addition to the "Garden State University" idea described earlier, there were suggestions to provide additional aid to private institutions in the state in order to make them more attractive options financially for students.

Several speakers emphasized the need to maintain and enhance the higher education opportunities available to minority and disadvantaged students. They were concerned that these opportunities not be forgotten in the desire to retain high-achieving New Jersey students. Related to this was the concern of one speaker regarding poor access to higher education for ESL students, especially given that New Jersey is ranked seventh in the nation in the number of school-age children from non-English-speaking households.

3.3 Summary of June Public Hearings and Conclusion

Unfortunately, only a few individuals provided testimony to the Task Force during the public hearings in June. This could be due to the fact that the three main questions presented for public discussion were relatively abstract at that point, given that there were not any concrete recommendations or proposals for consideration at the time.

While the small number of individuals who provided oral and written testimony does not allow us to draw any definitive conclusions regarding public opinion within the state on the three main questions at hand, the testimony that was provided did indicate some broad policy issues for consideration including:

- transfer articulation as it affects community college students;
- the preparation of higher education students to enter the workforce and the provision of continuing education for working adults;
- regional higher education needs in the southern and northwestern sections of the state;
- maintaining and enhancing higher education opportunities for minority and disadvantaged students; and
- the development of attractive higher education options for high-achieving New Jersey students.

3.4 Major Testimony Themes and Issues - December Hearings

In November 1997 the Task Force issued a draft report of the findings and recommendations for public commentary, and held three public hearings in early December. A total of 55 individuals testified; an additional 222 people commented via letter, fax, or E-mail.

The Recruitment and Retention of High-achieving High School Graduates. The majority of the testimony and correspondence was from those affiliated with Rutgers University and the College of New Jersey, in response to the Task Force's initial recommendation that "the recruitment of high-achieving, outmigrating, and resident students is not viewed as a statewide priority, and additional state funding should not be directed for that purpose." The principle theme in testimony and letters was the importance of the recruitment and retention of these students by New Jersey institutions. The arguments in favor of their retention included: the long-term health of the state, tightening labor markets that will make it harder to obtain employees, and the impact on the quality of the system of higher education, e.g., high-achieving students attract other high-achieving students and quality faculty, who enhance institutional reputation, thus stemming outmigration. One speaker noted that New Jersey institutions do not counter the aggressive recruiting of out-of-state institutions.

Review of Low Enrollment Majors. Several of those who testified or wrote to the Task Force suggested that rather than look at low enrollment majors, the examination should be of low enrollment courses. Others observed that low enrollment majors may have well enrolled courses, because those courses are necessary for other majors. Some programs, such as nursing and the allied health fields, have limited enrollments due to program accreditation requirements.

General Endorsement of the Draft Report. A number of speakers expressed enthusiasm for the report's commitment to access for minority, economically and academically disadvantaged students. Others noted the report's proper analytical framework. The attention to cost saving/cost sharing, transfer and articulation, collaboration, renewal/maintenance of facilities, and the recommendation to work within the system rather than create new institutions were generally praised. While multi-campus centers were broadly endorsed, one speaker urged that they be organized cooperatively not competitively. Two individuals urged the Task Force to add to a well-developed report a recommendation that institutions do more in educating for sustainable community development. Finally, the Provost at Rutgers-Newark questioned the value of having the statement on the consolidation of Newark institutions in the document.

Suggested Additions to the Report. The President of Burlington County College recommended that the Task Force consider turning four-year institutions into upper division schools, with the first two years of instruction offered at community colleges as a cost efficiency measure. He also asked that the report endorse part-time student assistance, and that construction of new facilities not be overlooked. The Vice President for Academic Affairs at Rutgers University suggested an addition to the report commenting on the impact of new doctoral programs relative to their cost and redeployment of resources. A high school counselor suggested that entry standards to baccalaureate granting institutions be raised to require a 1050 combined SAT score as a means of enhancing the quality of these institutions and improving graduation rates. He also disagreed with the report's conclusion that the state needs no more colleges and universities, proposing a small, very selective, residential, arts and sciences university located in Trenton. In addition to a number of the topics already discussed, the President of Ramapo College of New Jersey urged the Task Force to be bolder in its recommendations, suggesting that: the Commission on Higher Education develop greater research capacity, the supply of higher education resources in Newark and Camden be reconceptualized, community colleges be considered for expansion and consolidation, as appropriate, attention be given to the changing roles of independent and state colleges and universities based on how they are funded, and greater emphasis be given to the role of proprietary colleges in New Jersey.

3.5 Summary of December Public Hearings and Conclusion

Of the 55 individuals who testified, 48 addressed the topic of retaining high-achieving high school graduates, either exclusively or among other topics. A few commented on ways in which the Task Force might examine low enrollment majors. The remainder of the commentary supported various aspects of the draft report and suggested ways in which the report could be improved.

All of the above recommendations were considered by the Task Force in its deliberations, and many are addressed in the remaining chapters of the report.

4.0 INDICATORS OF DEMAND FOR HIGHER EDUCATION IN NEW JERSEY

This chapter addresses the primary drivers of demand (and indicators of demand) for higher education and the likely impact of these drivers on future demand for higher education in New Jersey. Specifically, this chapter addresses the following demand drivers and other indicators of demand:

- Demographic Trends and Projections
- Workforce Trends and Projections
- Current and Projected High School Graduates
- Attendance Patterns by Level of Academic Preparation
- Trends in Enrollment

4.1 Demographic Trends and Projections

Overall Population Trends and Projections

Actual and projected overall population for the state and counties are presented in Exhibit 4-1. New Jersey had over 7.7 million residents at the time of the 1990 Census and an estimated 7.9 million in 1994. As indicated, the state's population is projected to grow steadily, but slowly, through the year 2010 to just over 8.5 million, or a change of 7.6 percent from the 1994 level. A geographic illustration of projected growth from 1990 to 2010 by county is shown in Exhibit 4-2.

There is significant variance in actual and projected population growth at the county level. The state's most populous county, Essex, declined somewhat between 1990 and 1994, and is projected to continue to decline through 2010 as is the adjacent Union County. Of note is the fact that these are the only two counties in the state projected to decline in population during this period.

Just south of these two counties, however, Hunterdon, Somerset, and Middlesex counties are all projected to grow at a faster rate than the state average between 1994 and 2010. Middlesex is projected to be the most populous county by 2010 with almost three-quarters of a million residents, and Somerset is projected to have the fastest rate of growth of all counties at 25.6 percent. As indicated in Exhibit 4-2, other regions of the state with projected growth to 2010 include the coastal and southeastern areas of the state.

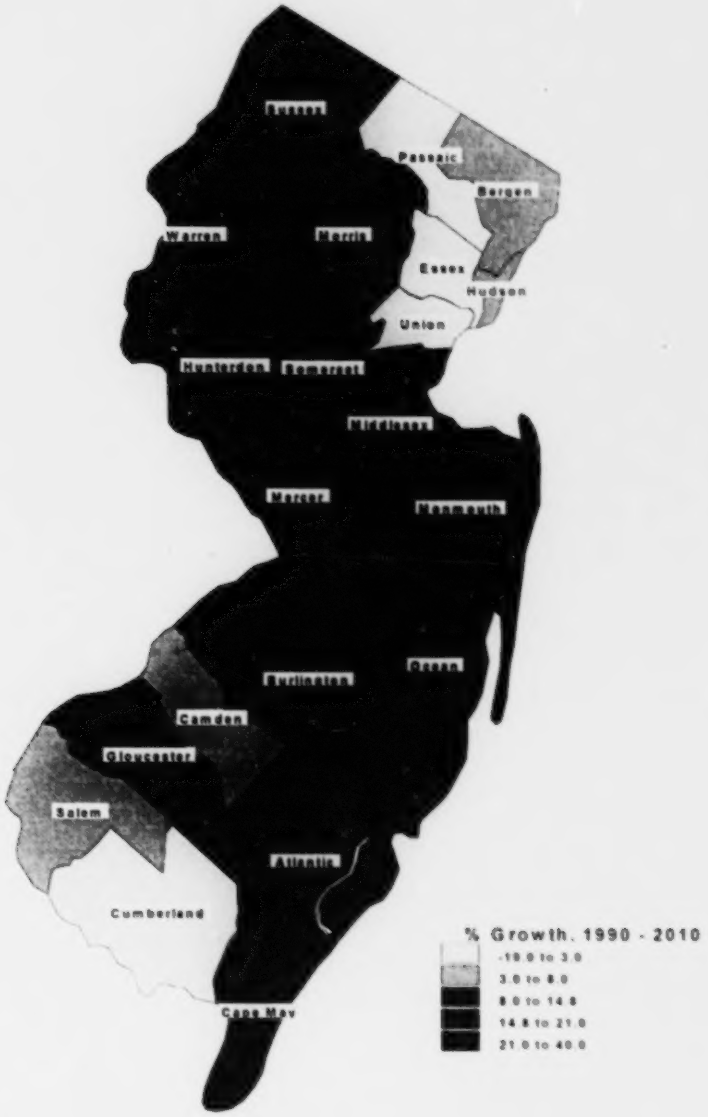
Regions projected to lag the statewide growth rate or remain unchanged to 2010 include the northeast and southwestern areas of the state. Interestingly, Gloucester County stands out as the only county projected to grow significantly in the southwestern part of the state (+14.6%). This may be related to its status as a suburban location in the Philadelphia metropolitan area.

EXHIBIT 4-1
ACTUAL AND PROJECTED NEW JERSEY POPULATION BY COUNTY
1990 TO 2010

	Census	Estimate	Projections			Percentage Change				
	4/1/90	7/1/94	7/1/2000	7/1/05	7/1/10	1990-94	1994-2000	2000-05	[illegible]	[illegible]
New Jersey	**7,730,188**	**7,903,996**	**8,135,000**	**8,321,900**	**8,501,500**	**2.2%**	**2.9%**	**2.3%**	**2.2%**	**7.6%**
Atlantic	224,327	232,231	250,900	268,700	288,000	3.5%	8.0%	7.1%	7.2%	24.0%
Bergen	825,380	842,383	856,100	866,900	877,000	2.1%	1.6%	1.3%	1.2%	4.1%
Burlington	395,066	398,812	410,400	419,600	429,100	0.9%	2.9%	2.2%	2.3%	7.6%
Camden	502,824	506,585	511,400	519,300	528,600	0.7%	1.0%	1.5%	1.8%	4.3%
Cape May	95,089	97,774	102,500	106,400	110,400	2.8%	4.8%	3.8%	3.8%	12.9%
Cumberland	138,053	136,8[illegible]	138,800	138,900	139,500	0.5%	0.0%	0.1%	0.4%	0.5%
Essex	777,964	765,348	756,100	739,900	722,400	-1.6%	-1.2%	-2.1%	-2.4%	-5.6%
Gloucester	230,082	241,527	254,600	265,400	276,700	5.0%	5.4%	4.2%	4.3%	14.6%
Hudson	553,099	552,387	555,400	563,400	571,900	-0.1%	0.5%	1.4%	1.5%	3.5%
Hunterdon	107,802	115,210	122,700	128,200	133,400	6.9%	6.5%	4.5%	4.1%	15.8%
Mercer	325,824	329,431	338,900	347,000	355,600	1.1%	2.9%	2.4%	2.5%	7.9%
Middlesex	671,811	692,869	721,200	745,800	771,400	3.1%	4.1%	3.4%	3.4%	11.3%
Monmouth	553,093	578,509	612,400	640,000	667,600	4.6%	5.9%	4.5%	4.3%	15.4%
Morris	421,361	438,471	453,400	465,500	477,600	4.1%	3.4%	2.7%	2.6%	8.9%
Ocean	433,203	456,518	490,500	515,700	538,700	5.4%	7.4%	5.1%	4.5%	18.0%
Passaic	453,302	461,782	464,300	464,800	463,500	1.9%	0.5%	0.1%	-0.3%	0.4%
Salem	65,294	64,786	66,100	67,100	67,900	-0.8%	2.0%	1.5%	1.2%	4.8%
Somerset	240,245	260,677	288,600	311,300	327,300	8.5%	10.7%	7.9%	5.1%	25.6%
Sussex	130,943	138,261	146,000	153,000	159,700	5.6%	5.6%	4.8%	4.4%	15.5%
Union	493,819	496,230	495,600	493,100	490,100	0.5%	-0.1%	-0.5%	-0.6%	-1.2%
Warren	91,607	95,402	99,200	102,000	105,100	4.1%	4.0%	2.8%	3.0%	10.2%

Source: New Jersey Department of Labor, Labor Market and Demographic Research, November 1996.

EXHIBIT 4-2
OVERALL POPULATION GROWTH, 1990 TO 2010


Sussex
Passaic
Bergen
Warren
Morris
Essex
Hudson
Union
Hunterdon
Somerset
Middlesex
Mercer
Monmouth
Burlington
Ocean
Camden
Gloucester
Salem
Atlantic
Cumberland
Cape May
% Growth, 1990 - 2010
-10.0 to 3.0
3.0 to 8.0
8.0 to 14.8
14.8 to 21.0
21.0 to 40.0

Source: NJ Department of Labor

Trends by Age Category

While overall population trends and projections are certainly relevant when considering the provision of educational services, the trends within age groups that are most likely to utilize higher institutions are of specific interest. For the purposes of this analysis, we have defined those individuals falling within ages 15 to 44 as being most likely to utilize higher education.

Statewide, almost one-half of the population is between the ages of 15 and 44. This is fairly consistent throughout each of the counties, with some variance (see Exhibit 4-3). However, this proportion is projected to decline by the year 2010 to just under 40 percent. Exhibit 4-4 presents trends at the state level for this age group disaggregated into three subgroups: 15-24, 25-34, and 35-44 for the years 1990, 1994, 2000, 2005, and 2010[1]. These data indicate a consistent pattern among the counties within each of the age groups:

- ***Age 15-24:*** Moderate decline through 2000, then upward growth.
- ***Age 25-34:*** Significant decline through 2005, then slight upward growth.
- ***Age 35-44:*** Moderate growth through 2000, then significant declines.

Exhibit 4-5 presents a geographic illustration of projected changes in population for the 15-44 age category between 1990 and 2010. As indicated, the 15-44 age group is projected to decline in absolute terms in all but five counties - Atlantic, Hunterdon, Ocean, Somerset and Sussex. In sum, for most of the state, the expected college - going population will be declining overall during the next several years, although there may be some increases in "traditional" age student demand after the year 2000.

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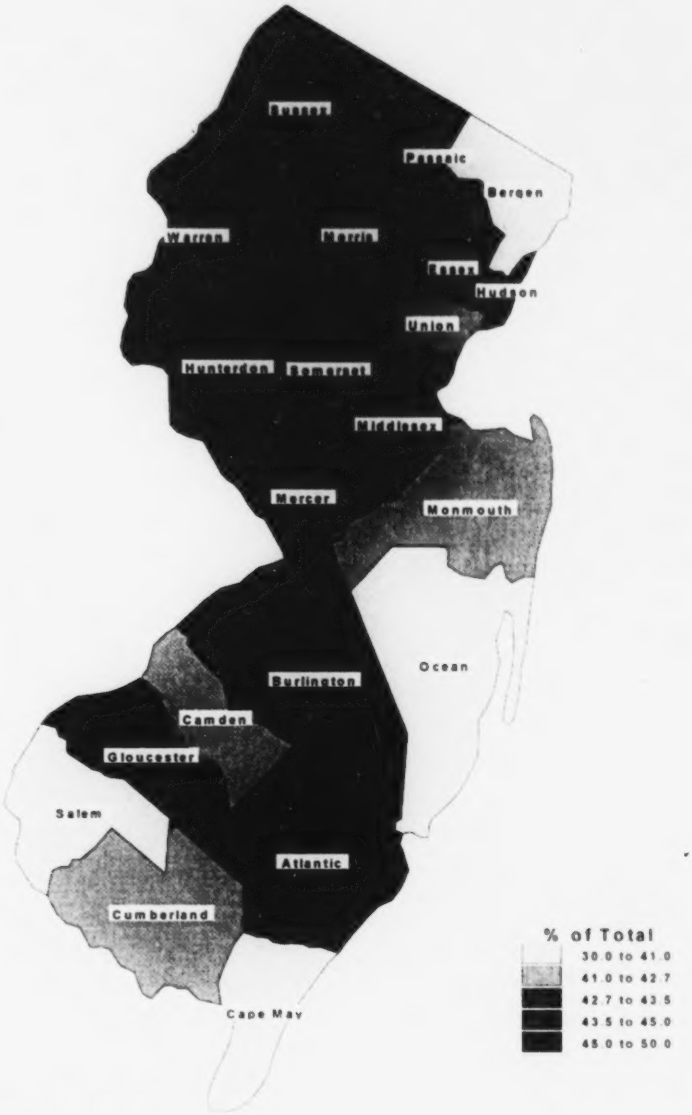
[1] County level data are presented in Appendix A-1

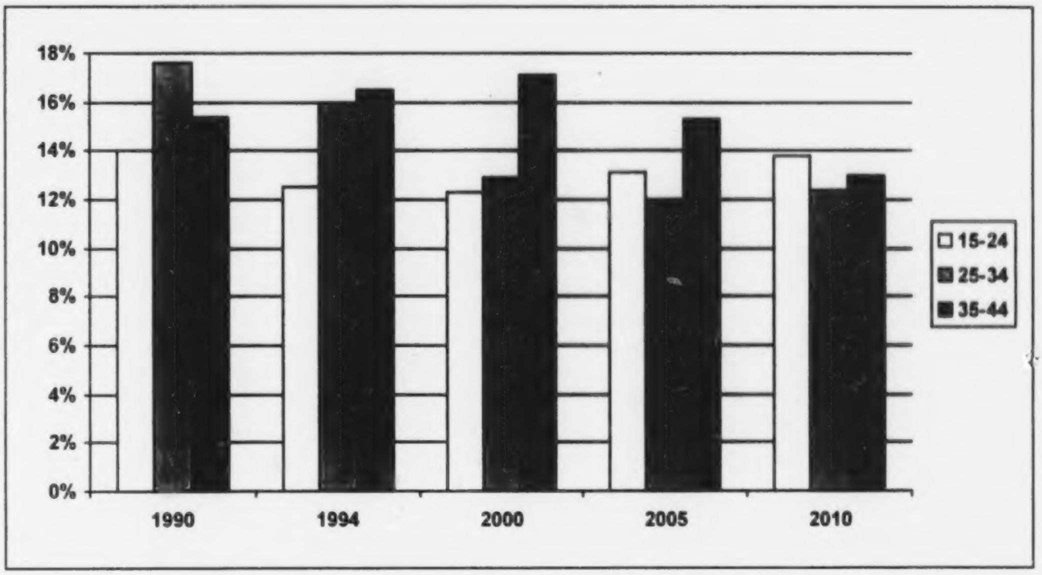
EXHIBIT 4-3

COLLEGE AGE POPULATION AS A PERCENTAGE OF TOTAL POPULATION


Sussex
Passaic
Bergen
Warren
Morris
Essex
Hudson
Union
Hunterdon
Somerset
Middlesex
Mercer
Monmouth
Ocean
Burlington
Camden
Gloucester
Salem
Atlantic
Cumberland
Cape May
% of Total
30.0 to 41.0
41.0 to 42.7
42.7 to 43.5
43.5 to 45.0
45.0 to 50.0

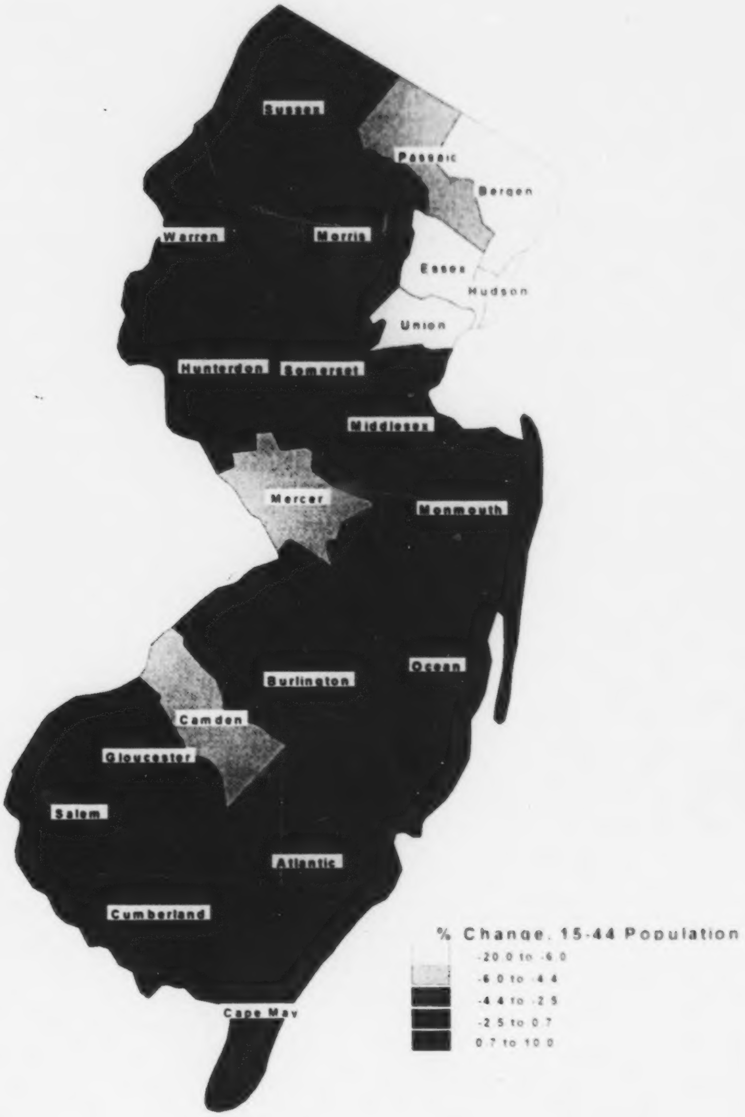
Source: NJ Department of Labor

EXHIBIT 4-4
PROPORTION OF NEW JERSEY POPULATION AGE 15-24, 25-34, AND 35-44
ACTUAL 1990 - PROJECTED 2010



33

EXHIBIT 4-5
PERCENTAGE CHANGE IN 15-44 YEAR OLD POPULATION
1990 - 2010


Sussex
Passaic
Bergen
Warren
Morris
Essex
Hudson
Union
Hunterdon
Somerset
Middlesex
Mercer
Monmouth
Burlington
Ocean
Camden
Gloucester
Salem
Atlantic
Cumberland
Cape May
% Change, 15-44 Population
-20.0 to -6.0
-6.0 to -4.4
-4.4 to -2.5
-2.5 to 0.7
0.7 to 10.0

Trends by Racial/Ethnic Category

Another issue of interest in assessing higher education capacity is the current and projected racial/ethnic mix within the state's population. Exhibit 4-6 shows the actual and projected proportion of residents who are white, African American, and other[2] at the state level[3]. While currently four-fifths of the state's population is White, the projected trend is for this proportion to decrease steadily through the year 2010. There is generally a consistent pattern of decreasing white population statewide, although the starting point varies significantly from 53.8 percent in Essex County to 97.6 percent in Sussex County.

On the other hand, the proportion of residents statewide who are African American is projected to increase slightly from 14.4 percent in 1994 to 15.8 percent in 2010. Again, this is consistent for each county with significant variance in the starting point ranging from 1.0 percent in Sussex County to 42.6 percent in Essex County. Of interest is the projection that African Americans will make up at least one-fifth of the overall population in nine counties (Atlantic, Burlington, Camden, Cumberland, Essex, Mercer, Passaic, Salem, and Union) by 2010.

Proportionately, the other category is projected to grow the most during this period from 4.7 percent in 1994 to 7.8 percent in 2010. There will be significant growth in virtually every county in this category through the year 2010, but especially in Atlantic, Bergen, Hudson and Middlesex counties.

Exhibit 4-7 presents a geographic illustration of the projected growth in the state's non-white population through 2010. Exhibit 4-8 shows the estimated percentage of non-white population geographically by 2010. As indicated, non-whites will likely constitute a larger proportion of the college-going population in several areas of the state during this period.

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[2] "Other" includes individuals of Asian and Native American heritage. Under Census definitions, individuals who are Hispanic may select White or Black as their race.

[3] County level data are presented in Appendix A-2

EXHIBIT 4-6
PROPORTION OF NEW JERSEY POPULATION BY RACE ACTUAL 1990 - PROJECTED 2010

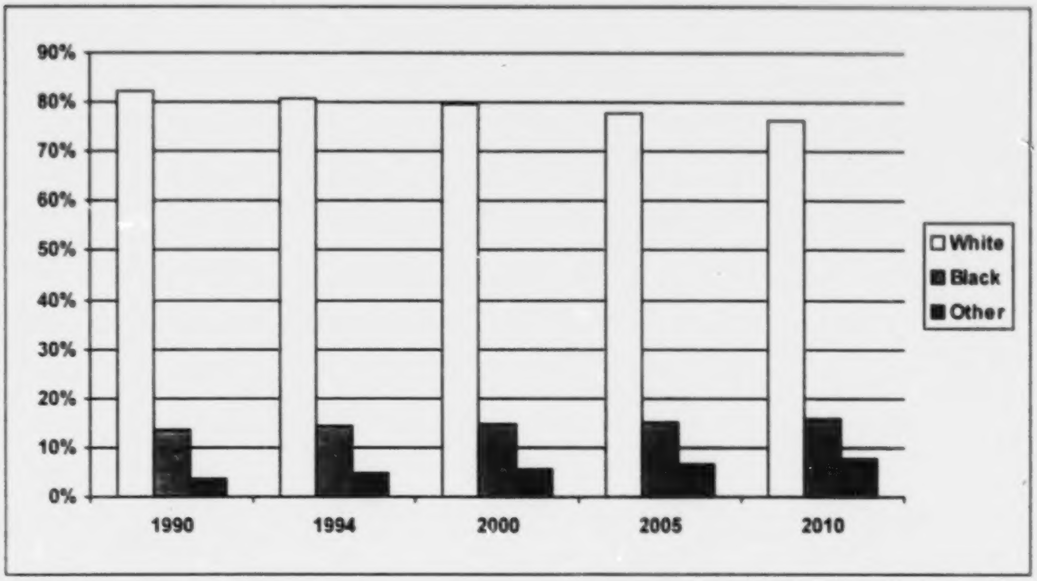
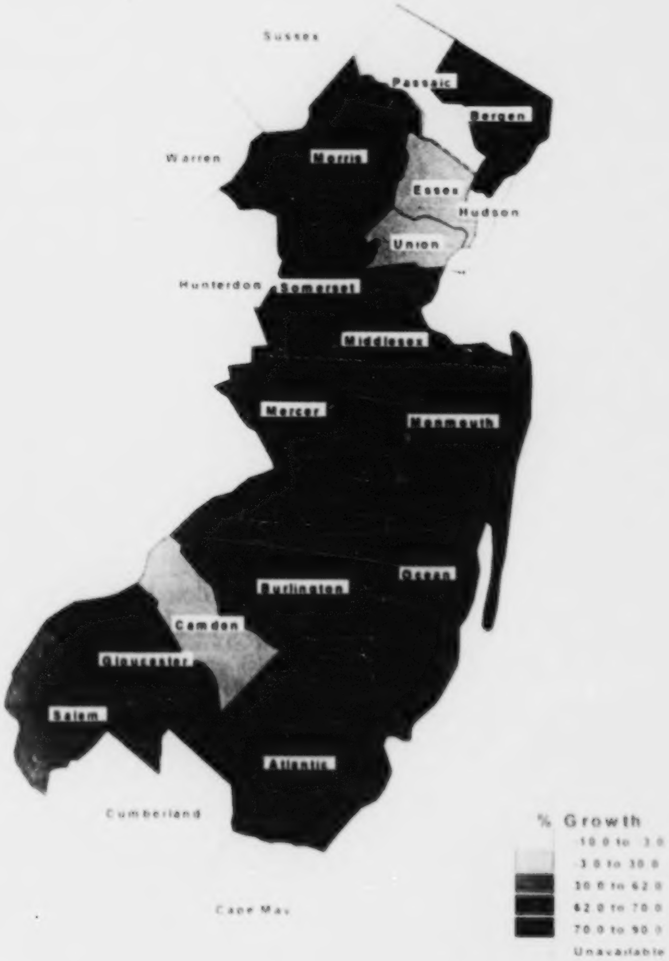


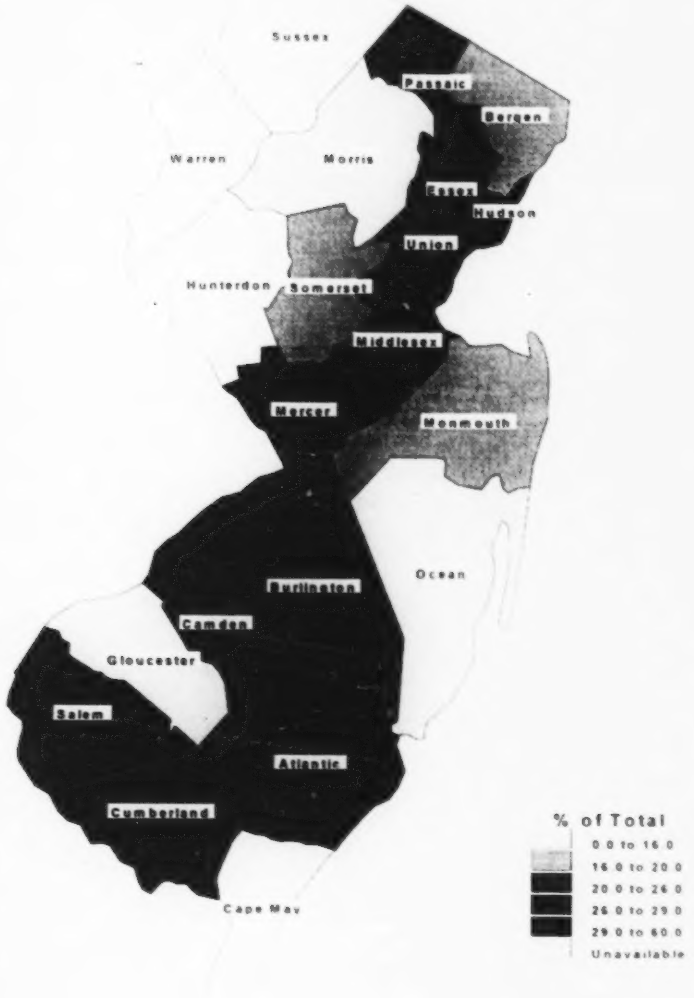
EXHIBIT 4-7
NON-WHITE POPULATION GROWTH, 1990 TO 2010


Sussex
Passaic
Bergen
Warren
Morris
Essex
Hudson
Union
Hunterdon
Somerset
Middlesex
Mercer
Monmouth
Ocean
Burlington
Camden
Gloucester
Salem
Atlantic
Cumberland
Cape May
% Growth
-10.0 to -3.0
-3.0 to 30.0
30.0 to 62.0
62.0 to 70.0
70.0 to 90.0
Unavailable

Source: NJ Department of Labor

Note: Percentage changes are not calculated for Sussex, Warren, Hunterdon, and Cape May counties given that base population numbers are too small.

EXHIBIT 4-8
ESTIMATED PERCENTAGE OF NON-WHITE POPULATION
2010


Sussex
Passaic
Bergen
Warren
Morris
Essex
Hudson
Union
Hunterdon
Somerset
Middlesex
Mercer
Monmouth
Ocean
Burlington
Camden
Gloucester
Salem
Atlantic
Cumberland
Cape May
% of Total
0.0 to 16.0
16.0 to 20.0
20.0 to 26.0
26.0 to 29.0
29.0 to 60.0
Unavailable

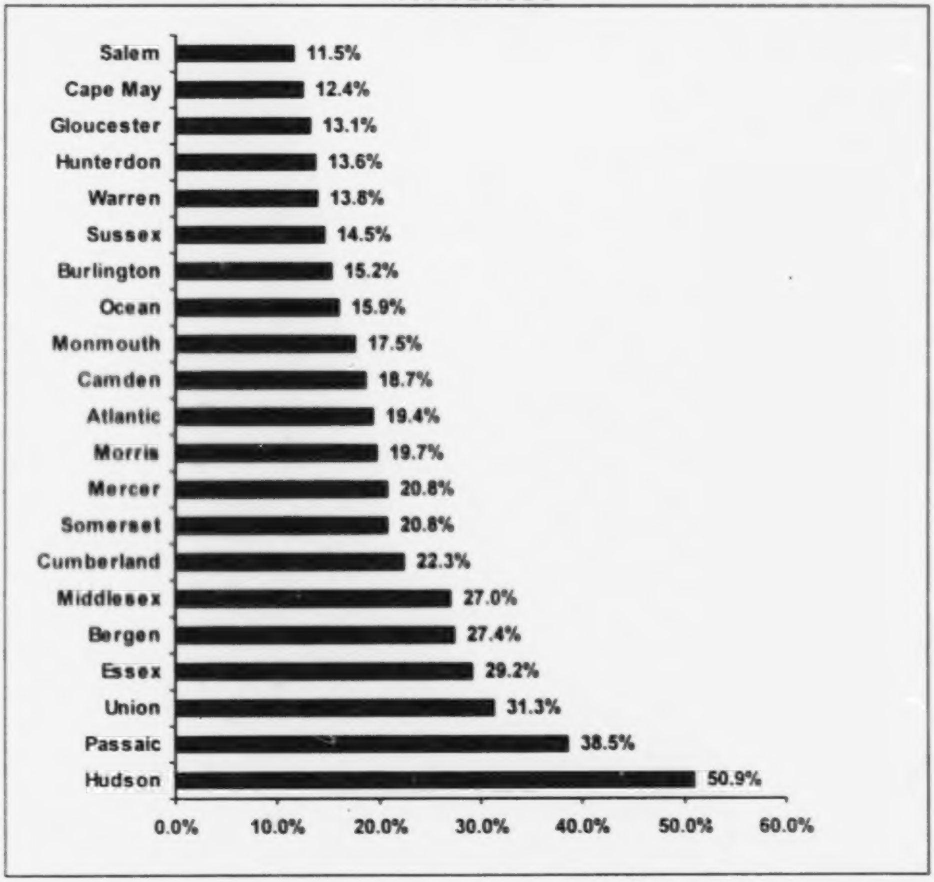
Source: NJ Department of Labor

Non-English Speaking Residents

A final demographic issue covered in this section that is critical in the delivery of higher education relates directly to the ability of instructor and student to communicate with one another. Students who do not have proficiency in the English language, or use it as a second language, require special attention in order to succeed. This issue was mentioned in particular as an area of concern at one of the public hearings, given that New Jersey ranks 7th in the nation in the proportion of school-age children who come from non-English speaking homes.

Exhibit 4-9 shows the proportion of the state population who do not use English as the primary language at home by county as of the 1990 Census. As indicated, there is significant variance from 11.5 percent in Salem County to 50.9 percent in Hudson County. Of note is the fact that one-fifth or more of the households in 11 of New Jersey's 21 counties do not use English as the primary language at home. In summary, these data indicate a need to maintain, if not enhance, the investment in programs that serve ESL students.

EXHIBIT 4-9
PERCENT OF NEW JERSEY RESIDENTS NOT USING ENGLISH AT HOME
1990 CENSUS



Source: Bureau of the Census.

4.2 Workforce Trends and Projections

Labor Force Trends and Projections

One basic factor affecting the future need for higher education in New Jersey is the size of the state's labor force. Exhibit 4-10 below shows the current and projected total labor force by county and for the state as a whole.

EXHIBIT 4-10
ACTUAL AND PROJECTED NEW JERSEY LABOR FORCE
BY COUNTY
1994 TO 2010

	Census	Estimate	Projections			Percentage Change				
	4/1/90	7/1/94	7/1/2000	7/1/05	7/1/10	1990-94	1994-2000	2000-05	2005-10	1994-2010
New Jersey	**4,104,676**	**4,051,000**	**4,223,700**	**4,387,200**	**4,554,700**	**-1.3%**	**4.3%**	**3.9%**	**3.8%**	**12.4%**
Atlantic	120,582	122,800	135,800	148,700	163,200	1.8%	10.6%	9.5%	9.8%	32.9%
Bergen	456,693	431,200	443,600	453,200	462,000	-5.6%	2.9%	2.2%	1.9%	7.1%
Burlington	206,575	205,600	211,700	220,000	228,900	-0.5%	3.0%	3.9%	4.0%	11.3%
Camden	253,621	252,000	256,800	266,800	278,400	-0.6%	1.9%	3.9%	4.3%	10.5%
Cape May	44,106	45,600	48,700	52,000	55,100	3.4%	6.8%	6.8%	6.0%	20.8%
Cumberland	65,830	64,400	65,800	66,600	68,700	-2.2%	2.2%	1.2%	3.2%	6.7%
Essex	399,871	373,600	374,900	367,300	359,600	-6.6%	0.3%	-2.0%	-2.1%	-3.7%
Gloucester	118,425	123,700	130,700	138,400	146,300	4.5%	5.7%	5.9%	5.7%	18.3%
Hudson	294,779	284,200	287,800	294,000	301,400	-3.6%	1.3%	2.2%	2.5%	6.1%
Hunterdon	60,122	62,600	68,000	72,100	76,400	4.1%	8.6%	6.0%	6.0%	22.0%
Mercer	175,516	170,000	175,600	182,600	188,900	-3.1%	3.3%	4.0%	3.5%	11.1%
Middlesex	379,620	380,800	401,500	418,800	437,400	0.3%	5.4%	4.3%	4.4%	14.9%
Monmouth	290,218	297,000	320,200	341,400	363,100	2.3%	7.8%	6.6%	6.4%	22.3%
Morris	243,109	245,300	256,200	267,600	279,300	0.9%	4.4%	4.4%	4.4%	13.9%
Ocean	192,759	199,100	218,500	237,600	255,700	3.3%	9.7%	8.7%	7.6%	28.4%
Passaic	242,889	230,300	234,400	237,400	242,500	-5.2%	1.8%	1.3%	2.1%	5.3%
Salem	31,339	30,900	32,300	33,700	34,800	-1.4%	4.5%	4.3%	3.3%	12.6%
Somerset	141,546	149,700	168,700	186,000	197,700	5.8%	12.7%	10.3%	6.3%	32.1%
Sussex	70,546	72,800	77,400	83,600	91,300	3.2%	6.3%	8.0%	9.2%	25.4%
Union	268,600	260,800	264,100	265,900	267,100	-2.9%	1.3%	0.7%	0.5%	2.4%
Warren	47,929	48,600	51,100	53,700	56,800	1.4%	5.1%	5.1%	5.8%	16.9%

Source: New Jersey Department of Labor, Labor Market and Demographic Research, November 1996.

As indicated, after a slight decline between 1990 and 1994, New Jersey's total labor force is projected to grow from 4.1 million in 1994 to 4.6 million in 2010, or 12.4 percent.

Not surprisingly, those counties that are projected to grow rapidly in population are also projected to grow rapidly in their labor force, and vice versa. Atlantic County in the southeast and Somerset County in the north-central part of the state are the projected growth leaders between 1994 and 2010, at 32.9 percent and 32.1 percent respectively. Other counties that are projected to grow rapidly during this period include Ocean (28.4%), Sussex (25.4%), Monmouth (22.3%), Hunterdon (22.0%), and Cape May (20.8%).

The only county projected to have a declining labor force during this period is Essex (-3.7%), which is reflective of its projected declining population. Several counties are projected to have a less than 10 percent growth rate between 1994 and 2010: Bergen (7.1%), Cumberland (6.7%), Hudson (6.1%), Passaic (5.3%), and Union (2.4%).

With the exception of Cumberland, these counties are all located in the northeast corner of the state.

Industry Employment Trends and Projections

Equally important is the employment outlook in specific industry groupings. Exhibit 4-11 shows the actual and projected trend in nonfarm employment by major industry category for New Jersey for 1990, 1994, and 2005. As indicated, total nonfarm employment in the state declined slightly between 1990 and 1994 due to the state's prolonged recession in the early part of the 1990s. All but two of the major industry areas — transportation/communication/public utilities and services — declined in employment during this period. Of note are the very different paths followed by the two largest industries in the state — manufacturing and services — during the early 1990s. During this period, manufacturing lost almost 90,000 jobs, while the service industries increased by 61,000 jobs.

Despite the setbacks of the recession, overall nonfarm employment is projected to grow by almost 400,000 jobs statewide, or 10.9%, between 1994 and 2005. More than four out of five of these jobs (83%) is accounted for by the services industry. Within the services sector, the largest projected growth areas are business services, health services, and social services. From an educational standpoint, the range of educational and training requirements for entry-level employment in these industries ranges from a high school diploma to a professional degree (e.g., law, medicine). As a result, the ultimate impact of employment growth in these service industries on demand for higher education will also be mixed.

EXHIBIT 4-11
ACTUAL AND PROJECTED CHANGE IN NEW JERSEY NONFARM EMPLOYMENT BY INDUSTRY: 1990 TO 2005

	1990		1994		2005 (Projected)		Change: 1990-94		Change: 1994-2005	
Industry	**# (in 000s)**	**% Total**	**# (in 000s)**	**% Total**	**# (in 000s)**	**% Total**	**#**	**%**	**#**	**%**
Mining	2.3	0.1	1.9	0.1	1.9	0.0	(0.4)	(17.4)	-	-
Construction	146.4	4.0	121.9	3.4	136.9	3.5	(24.5)	(16.7)	15.0	12.3
Manufacturing	596.6	16.4	509.9	14.3	416.3	10.6	(86.7)	(14.5)	(93.6)	(18.4)
Trans., Comm., & Pub. Utilities	237.3	6.5	247.8	7.0	268.7	6.8	10.5	4.4	20.9	8.4
Wholesale Trade	275.2	7.6	262.4	7.4	289.0	7.3	(12.8)	(4.7)	26.6	10.1
Retail Trade	589.0	16.2	572.7	16.1	627.8	15.9	(16.3)	(2.8)	55.1	9.6
Finance, Ins., Real Estate	238.7	6.6	231.4	6.5	247.0	6.3	(7.3)	(3.1)	15.6	6.7
Services	978.0	26.9	1,039.3	29.2	1,360.7	34.5	61.3	6.3	321.4	30.9
Subtotal - Private	3,063.5	84.3	2,987.3	84.0	3,348.3	84.9	(76.2)	(2.5)	361.0	12.1
All Government	571.6	15.7	568.2	16.0	596.5	15.1	(3.4)	(0.6)	28.3	5.0
STATE TOTAL	**3,635.1**	**100.0**	**3,555.5**	**100.0**	**3,944.8**	**100.0**	**(79.6)**	**(2.2)**	**389.3**	**10.9**

Source: NJ Department of Labor, March 1997 INDUSTRY AND OCCUPATIONAL EMPLOYMENT PROJECTIONS FOR NEW JERSEY: 1994 TO 2005, VOLUME I PART A.

The regional employment patterns are similar to the statewide pattern, although each with slightly different emphases as indicated in Exhibit 4-12. The fastest employment growth is projected to occur in the coastal region (20.5%), followed by the northwest (16.5%), and central (14.6%) regions of the state. Moderate employment growth (12.3 %) is projected for the southern region while the six county northern region, home to many of the counties with the largest employment in the state, is projected to have the slowest projected growth — only 5.8 percent. These trends result in a continuing redistribution of employment share from the northern part of the state to the coastal, central, and southern regions. From 1980 to 1994, the share of New Jersey employment in the northern region declined from 54.1 percent to 47.7 percent of New Jersey's employment and is projected to decrease to 45.5 percent of the statewide total by the year 2005. The employment share for every other region is projected to increase.

EXHIBIT 4-12
PROJECTED GROWTH INDUSTRIES BY REGION
1994 TO 2005

Region	Counties Included	Projected Growth: 1994-2005	Projected Growth Industries
Central	Middlesex Somerset Mercer Hunterdon	+14.6% (110,000)	Wholesale trade; retail trade; business services; finance, insurance & real estate; communications; manufacturing; engineering services.
Coastal	Atlantic Monmouth Ocean Cape May	+20.5% (105,100)	Hotel/casino industries; construction; retail trade; health services; manufacturing.
Northern	Bergen Morris Hudson Essex Union Passaic	+5.8% (98,500)	Business services; personal services; wholesale trade; finance, insurance & real estate; health services; transportation, communications & public utilities; social services.
Southern	Burlington Camden Gloucester Cumberland Salem	+12.3% (64,800)	Business services; health services; retail trade; construction; transportation/communications/public utilities; personal services; government; chemical manufacturing.
Northwest	Sussex Warren	+16.5% (10,900)	Construction; transportation/communications/public utilities; wholesale trade; retail trade; services; health services.

Source: NJ Department of Labor, March 1997 INDUSTRY AND OCCUPATIONAL EMPLOYMENT PROJECTIONS FOR NEW JERSEY COUNTIES: 1994 TO 2005, VOLUME I PART B.

Occupational Trends and Projections

The projected growth in the various occupations will have a direct impact on future higher education needs in New Jersey. Exhibit 4-13 provides three perspectives on occupational growth areas for New Jersey through the year 2005: occupations with the greatest employment growth; occupations with the greatest percentage growth; and occupations with the most average annual job openings. Occupations that typically require some level of higher education or training are in bold print.

EXHIBIT 4-13
NEW JERSEY STATEWIDE GROWTH OCCUPATIONS THROUGH 2005

Occupations With Greatest # Growth	#	Occupations With Greatest % Growth	%	Occupations With Greatest Annual Job Openings	#
Systems Analysts	22,300	***Systems Analysts***	108.6	Cashiers	4,470
Nursing Aides	15,400	***Computer Engineers***	85.4	Retail Salespersons	4,450
Waiters & Waitresses	13,600	Home Health Aides	83.3	Waiters & Waitresses	3,640
Home Health Aides	13,400	Residential Counselors	59.6	***Marketing & Sales***	2,550
Marketing & Sales	12,900	Corrections Officers	55.6	Janitors	2,540
Janitors	12,500	***Securities Salesperson***	54.2	Office Clerks	2,330
Retail Salespersons	11,300	Casino Dealer	51.3	Secretaries	2,310
Cashiers	11,300	***Medical Assistants***	49.6	***Managers & Execs.***	2,300
Guards	10,200	***Teacher Aides/Assts.***	47.8	***Systems Analysts***	2,250
Nurses	9,100	***Preschool Teachers***	44.4	***Nursing Aides***	1,980

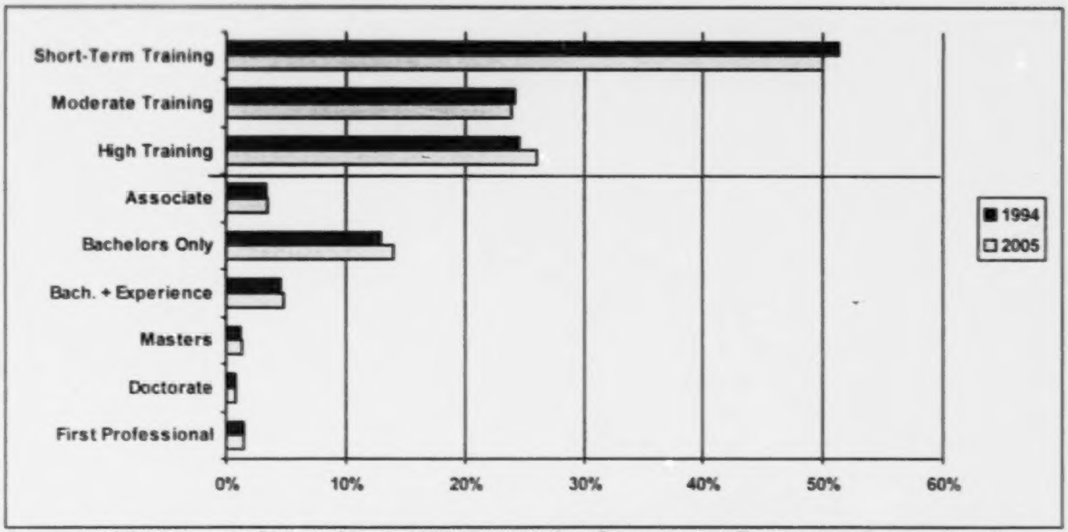
Source: NJ Department of Labor, March 1997, Industry and Occupational Projections 1994 to 2005, Volume 1 Part A.

As indicated, occupations that require at least some higher education or training constitute the majority of the projected high percentage growth occupations, and about half of the occupations with the greatest projected growth overall and average annual job openings. The specific occupations shown also reflect the projected growth in the business services and health services industries discussed earlier.

The particular educational requirements of the various occupations have a definite bearing on higher education needs in the future. Exhibit 4-14 provides a projection of the distribution of jobs in 2005 by level of education required at a statewide level (county level data not available). "Short-term training" and "moderate training" occupations are those that generally do not require formal education above a high school diploma while "high training" gives some form of higher education.

As indicated, it is projected that 26 percent of New Jersey jobs in the year 2005 will require some form of higher education, up slightly from 24.6 percent in 1994. Almost three-fourths of all jobs will still be in the "low" or "moderate" training categories in 2005, but down slightly from 1994 levels. Viewed another way, proportionately all of the growth between 1994 and 2005 in the state will be in jobs that require some form of higher education, though the number of college graduates required may be less than the number available especially if the state retains its status as a net importer of college graduates.

EXHIBIT 4-14
ACTUAL AND PROJECTED DISTRIBUTION OF NEW JERSEY EMPLOYMENT BY LEVEL OF EDUCATION/TRAINING REQUIRED
1994 AND 2005



Source: NJ Department of Labor, March 1997 INDUSTRY AND OCCUPATIONAL EMPLOYMENT PROJECTIONS FOR NEW JERSEY: 1994 TO 2005, VOLUME I PART A. ***Note - "High Training" includes all higher degree levels shown below the line in graph. Definitions of each training category are provided in Appendix B***

Exhibit 4-15 shows the projected growth occupations for each region in the state. As indicated, the specific occupations vary from region to region, although several of the regions are expected to have growth in high tech professions involving the sciences and engineering as well as in occupations serving the health care industry. These are clearly occupations that require at least a bachelor's degree for entry-level positions. The Northern Region is also expecting an increased need for occupations serving business and related services industries (e.g., law, banking and financial services.) Equally of note is the expected increased need for some of the skilled trade occupations including mechanics, construction workers, and various equipment operators. Many of these occupations are increasingly drawing employees from related programs at community colleges and vocational-technical institutions. Such programs range from certificate programs of variable length to associate degree programs requiring two-years of full-time study.

EXHIBIT 4-15
PROJECTED GROWTH OCCUPATIONS BY REGION
1994 - 2005

Region	Counties Included	Projected Growth: 1994-2005	Projected Growth Occupations
Central	Middlesex Somerset Mercer Hunterdon	+14.6% (110,000)	Engineers; computer & math professionals; marketing & sales representatives of services; fire, police & guard occupations; administrative support/clerical workers and operators; fabricators & laborers; natural scientists; construction trades workers; machine setters & operators; and product-sales occupations.
Coastal	Atlantic Monmouth Ocean Cape May	+20.5% (105,100)	Food & beverage preparation workers; casino dealers; food and beverage service workers; construction trades occupations; sales representatives of products; health practitioners & technicians; health service workers; mechanics/installers/ repairers; teachers, librarians & counselors.
Northern	Bergen Morris Hudson Essex Union Passaic	+5.8% (98,500)	Computer & math professionals; law & related occupations; cleaning & building service occupations; marketing & sales representatives; security & commodity brokers; sales representatives of services; health service occupations; fire, police & guard occupations; transportation & material moving machine operators; food & beverage service occupations; social scientists; health practitioners & technicians; communications & mail equipment operators; and selected personal service occupations.
Southern	Burlington Camden Gloucester Cumberland Salem	+12.3% (64,800)	Computer & math professionals; material recording, scheduling & distribution clerks (wholesale trade); health practitioners & technicians; health service workers; sales representatives of products; food & beverage service occupations; construction occupations; transportation & material moving machine operators; personal service occupations (e.g., childcare workers, hair dressers, cosmetologists); mechanics, installers & repairers; engineers & related occupations; fire, police & guards.
Northwest	Sussex Warren	+16.5% (10,900)	Mechanics, installers, repairers; construction tradesworkers; teachers, librarians & counselors; health practitioners & technicians; and health service workers.

Source: NJ Department of Labor, March 1997 Industry And Occupational Employment Projections For New Jersey Counties: 1994 To 2005, Volume I Part B.

4.3 Current and Projected High School Graduates

Another crucial driver of higher education demand is the high school graduate pool. Exhibit 4-16 shows the number of public high school graduates by county for 1994-95 and their postgraduation plans. Over 67,000 students graduated from the state's public high schools in 1994-95, and almost one-third were minorities.[4] The largest number of high schools graduates were in the heavily populated northern counties. These counties also tended to have a high proportion of minority high school graduates. Atlantic, Camden, and Cumberland counties in the south also had higher than average proportions of minority students in their high school graduate pools.

Three-fourths of the 1994-95 public high school graduates statewide, or 51,000, planned to enroll in a higher institution to continue their education. This is comparable to the intentions of public high school graduates nationally[5]. This ranged from a high of 86 percent among graduates in Bergen and Morris counties to a low of 61 percent for graduates in Cumberland County. Exhibit 4-17 is a graphical presentation of the percentage of high school graduates by county intending to go to college, and the percentage intending to go in-state and out-of-state.

Three out of five graduates planning to enroll in higher education planned to remain in the state. This ranged from a high of 86.1 percent in Hudson County to a low of 43 percent from Warren and Hunterdon counties. Interestingly, the counties that have lower than average proportions of high school graduates planning to enroll in higher education tend to have higher than average proportions planning to remain in the state to do so, and vice versa. This may be due to socioeconomic reasons such as the relative ability to pay for college and the mobility of the individual. One notable exception is Warren County in the northwest, where only 67.3 percent of the graduates planned to continue in higher education, but where 57.1 percent (the highest statewide) planned to enroll out-of-state. This could be a reflection of Warren's proximity to northeastern Pennsylvania and its higher education institutions, as well as the fact that there are no public four-year institutions located nearby.

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[4] Estimates of private high school graduates are not available, although based on private high school enrollment data, there could be as many as 11,700 additional graduates from private high schools statewide.

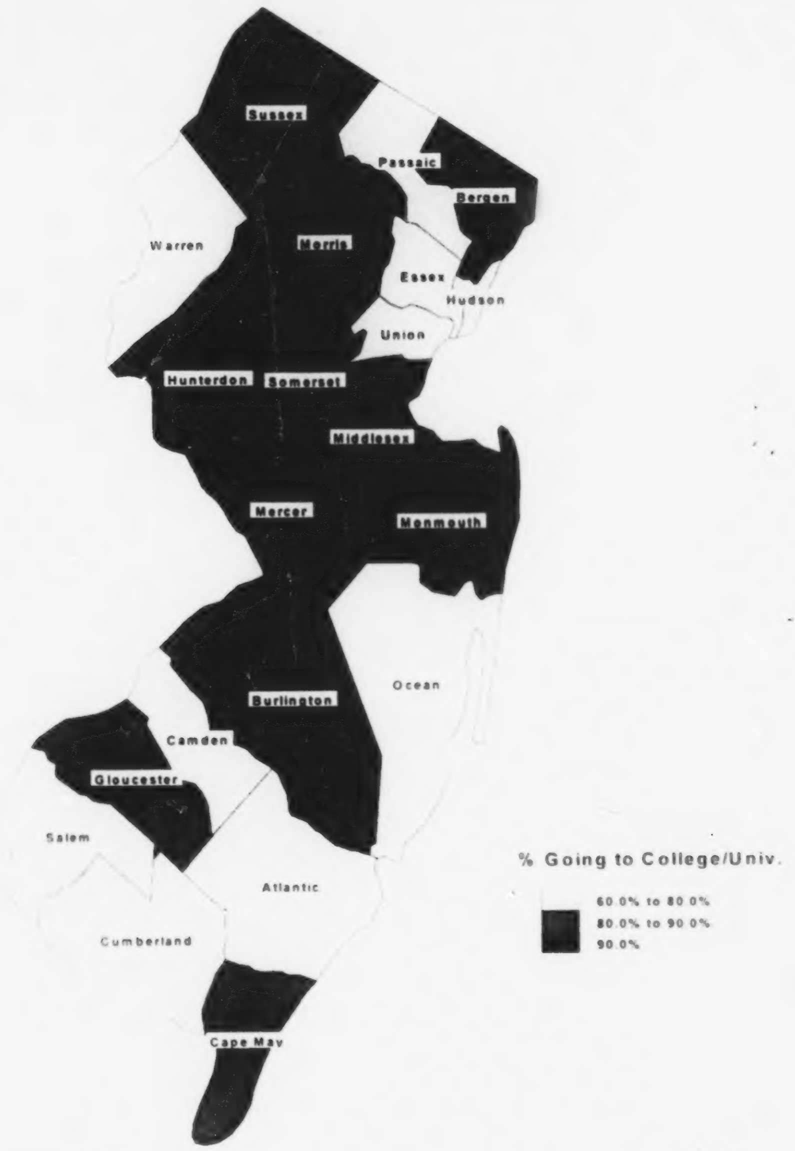
[5] 74.8% of public high school seniors surveyed in the 1992 High School and Beyond Survey indicated that they planned to attend college right after high school. Source: 1998 Digest of Education Statistics, Table 142.

EXHIBIT 4-16
1994-95 PUBLIC HIGH SCHOOL GRADUATES BY COUNTY AND THEIR POSTGRADUATION PLANS

	1994-95	Percent	Postgraduation Plans of 94-95 HS Grads.		
	Pub. HS Grads.	Minority	% at Coll./U.	% In-State	% Out-of-State
New Jersey	**67,403**	**30.7%**	**75.7%**	**60.2%**	**39.8%**
Atlantic	2,140	34.3%	61.2%	69.0%	31.0%
Bergen	7,284	24.6%	85.7%	49.6%	50.4%
Burlington	3,672	24.9%	75.4%	56.0%	44.0%
Camden	4,738	34.5%	67.2%	61.5%	38.5%
Cape May	714	10.5%	76.1%	53.6%	46.4%
Cumberland	1,265	38.0%	61.1%	70.5%	29.5%
Essex	5,709	57.9%	72.8%	61.1%	38.9%
Gloucester	2,421	14.7%	76.2%	65.0%	35.0%
Hudson	3,587	70.9%	66.0%	86.1%	13.9%
Hunterdon	1,095	3.0%	80.1%	43.1%	56.9%
Mercer	2,612	31.1%	80.0%	51.7%	48.3%
Middlesex	5,670	34.7%	76.7%	69.7%	30.3%
Monmouth	5,857	18.4%	81.4%	59.1%	40.9%
Morris	4,346	15.6%	85.9%	48.5%	51.5%
Ocean	3,890	9.1%	74.0%	71.6%	28.4%
Passaic	3,517	43.8%	70.2%	67.2%	32.8%
Salem	658	17.2%	64.4%	60.8%	39.2%
Somerset	1,926	22.8%	83.2%	55.4%	44.6%
Sussex	1,541	3.3%	75.7%	55.8%	44.2%
Union	3,858	44.7%	74.3%	59.6%	40.4%
Warren	903	3.2%	67.3%	42.9%	57.1%

Source: NJ State Department of Education, Vital Education Statistics 1995-96.

EXHIBIT 4-17
PERCENTAGE OF HIGH SCHOOL GRADUATES GOING ON TO COLLEGE


Sussex
Passaic
Bergen
Warren
Morris
Essex
Hudson
Union
Hunterdon
Somerset
Middlesex
Mercer
Monmouth
Ocean
Burlington
Camden
Gloucester
Salem
Atlantic
Cumberland
Cape May
% Going to College/Univ.
60.0% to 80.0%
80.0% to 90.0%
90.0%

Source: NJ Department of Labor

Exhibit 4-18 compares the statewide distribution of 1994-95 public high school graduates with the distribution of those planning to enroll in higher education by racial/ethnic status. Data are not presented by county given the very small numbers of minority students in some counties. As indicated, white and Asian students tend to have a somewhat higher than expected likelihood of planning to continue in higher education, while Black and Hispanic students have a somewhat lower than expected likelihood.

EXHIBIT 4-18
DISTRIBUTION OF 1994-95 PUBLIC HIGH SCHOOL GRADUATES BY RACIAL/ETHNIC STATUS

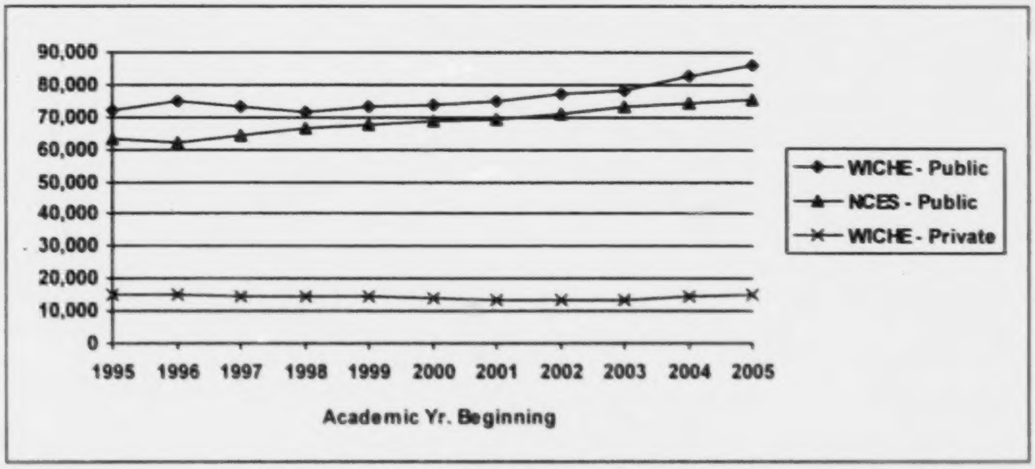
	White	Black	Hispanic	Native American	Asian
% HS Grads	69.3%	14.6%	10.0%	0.1%	5.8%
% Planning to Attend Colleges or Universities	72.6%	12.0%	8.3%	0.1%	7.1%

Source: NJ State Department of Education, Vital Education Statistics 1995-96.

What of the future pool of high school graduates? There are no estimates of high school graduates provided at a county level, although there are two sources of estimates at a statewide level. The Western Interstate Commission on Higher Education (WICHE) and the federal National Center for Education Statistics (NCES) both publish projections of public high school graduates by state, and WICHE also constructs projections of private high school graduates.

Exhibit 4-19 shows the projected number of New Jersey high school graduates from 1995-96 through 2005-06 by both agencies. While the number of public high school graduates in New Jersey declined from almost 81,000 in 1987-88 to just under 67,000 in the early 1990s, this number is projected to increase during the next several years. As indicated, both agencies project an increase in public high school graduates through the year 2005-06, although with different short-term trends. The out-year projections range from 75,600 (NCES) to 86,200 (WICHE). If the 1994-95 proportion of public high school graduates planning to continue in higher education is applied to these figures, 57,200 to 65,250 of these students could be interested in higher education (34,400 - 39,300 of them in-state.) Additionally, WICHE projects that private high school graduates will increase slightly during this period as well, to just over 15,200. These data are consistent with the projected increase in 15-24-year-olds after the year 2000.

EXHIBIT 4-19
PROJECTIONS OF NEW JERSEY HIGH SCHOOL GRADUATES 1995-96 TO 2005-06



Sources: Western Interstate Commission on Higher Education, 1996; National Center for Education Statistics, 1996.

4.4 Higher Education Participation and Attendance Patterns

One fundamental question related to higher education access is to what extent residents actually participate in higher education within the state. Exhibit 4-20 shows two measures of participation for New Jersey residents by county based on Fall 1995 first-time New Jersey college students: first-time students as a percent of 1994-95 high school graduates and first-time students as a percent of "traditional age" population students.

There is significant variance among the counties as to in-state participation in higher education in both measures.[6] The highest levels of in-state participation for first-time freshmen are primarily in the northern counties (Essex, Hudson, Passaic, and Union), although Middlesex (central) and Gloucester (southern) also have higher than average participation rates as represented by these two measures. The lowest levels of in-state participation are in the southern and southeastern counties (Atlantic, Cape May, Cumberland, and Salem). Interestingly, Warren County in the northwest also has a low in-state participation rate, which is consistent with the high proportion of county high school graduates that indicated an intention to pursue their higher education out-of-state. Ultimately, the extent to which students go directly to college upon graduation from high school, or participate in higher education at all is related to a number of factors including family income, personal circumstances and the student's perceived "opportunity cost" of attending college versus going directly to the work force.

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[6] Note: 1994-95 high school graduates are based on actual public high school graduates plus an estimate of private high school graduates.

EXHIBIT 4-20
PARTICIPATION OF FIRST-TIME, FULL-TIME NJ RESIDENT FRESHMEN BY COUNTY OF ORIGIN, FALL 1995

County of Residence	Total FT-FT Freshmen Fall 1995	Participation Measures	
		% of 94-95 HS Graduates	% of Age 15-24 Population
New Jersey	**33,276**	**42.1%**	**3.4%**
Atlantic	553	21.7%	1.9%
Bergen	3,473	39.0%	3.7%
Burlington	1,562	38.3%	3.0%
Camden	2,039	35.3%	3.2%
Cape May	181	22.4%	1.7%
Cumberland	399	29.0%	2.2%
Essex	3,170	46.4%	3.1%
Gloucester	1,195	47.5%	3.9%
Hudson	3,031	64.0%	4.1%
Hunterdon	379	34.4%	3.0%
Mercer	1,243	36.9%	2.7%
Middlesex	3,484	54.5%	3.6%
Monmouth	2,744	39.9%	4.1%
Morris	1,812	37.4%	3.4%
Ocean	1,641	38.5%	3.5%
Passaic	1,981	48.6%	3.1%
Salem	187	25.5%	2.4%
Somerset	929	38.1%	3.3%
Sussex	691	40.1%	4.4%
Union	2,159	45.5%	3.7%
Warren	285	29.6%	2.6%

Related to this are the enrollment preferences of first-time New Jersey students. Exhibit 4-21 shows the enrollment of Fall 1995 first-time, full-time resident freshmen by county of origin and type of institution.

As indicated, there were over 33,000 resident new freshmen enrolled in New Jersey institution in Fall 1995, with almost half enrolled in the community colleges. Over one-third were enrolled in the public research universities or state colleges, with the remaining students in independent, proprietary, or religious institutions. Viewed another way, 85 percent of resident new freshmen chose to enroll in public institutions of one type or another in fall 1995.

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EXHIBIT 4-21

ENROLLMENT OF FIRST-TIME, FULL-TIME NJ RESIDENT FRESHMEN BY COUNTY OF ORIGIN AND TYPE OF INSTITUTION, FALL 1995

County of Residence	Total FT-FT Freshmen	Public Research U.	State Coll. & U.	Community Colleges	Ind. Inst (Pub. Mission)	Proprietary/ Religious
New Jersey	**33,276**	**16.3%**	**19.4%**	**48.2%**	**13.1%**	**3.0%**
Atlantic	553	14.6%	33.6%	41.0%	7.6%	3.1%
Bergen	3,473	18.6%	22.9%	37.5%	16.5%	4.4%
Burlington	1,562	16.3%	15.1%	60.1%	8.0%	0.5%
Camden	2,039	18.3%	19.0%	55.8%	6.7%	0.2%
Cape May	181	9.9%	32.0%	40.3%	17.7%	0.0%
Cumberland	399	8.0%	19.3%	66.2%	5.8%	0.8%
Essex	3,170	17.0%	19.6%	39.4%	19.8%	4.1%
Gloucester	1,195	11.8%	23.2%	60.1%	4.9%	0.0%
Hudson	3,031	14.6%	23.8%	39.5%	19.7%	2.4%
Hunterdon	379	20.1%	11.9%	55.1%	12.1%	0.8%
Mercer	1,243	13.2%	13.0%	59.9%	13.6%	0.3%
Middlesex	3,484	23.7%	14.9%	47.7%	8.7%	5.0%
Monmouth	2,744	14.4%	13.1%	56.1%	14.7%	1.7%
Morris	1,812	17.1%	14.7%	52.8%	13.0%	2.5%
Ocean	1,641	10.4%	17.3%	56.5%	15.0%	0.9%
Passaic	1,981	14.0%	29.1%	36.2%	13.6%	7.0%
Salem	187	17.1%	28.3%	48.1%	6.4%	0.0%
Somerset	929	22.2%	12.3%	53.3%	10.8%	1.5%
Sussex	691	8.2%	17.5%	64.5%	8.0%	1.7%
Union	2,159	16.2%	23.4%	43.4%	12.4%	4.5%
Warren	285	14.7%	15.1%	54.0%	14.7%	1.4%

Source: NJ Commission on Higher Education.

This pattern was similar among counties of origin, albeit with different degrees of magnitude. The availability of higher options within a given county or nearby county probably has an effect on the distribution. For example, counties with only a community college within tended to have large proportion of students enrolling in community colleges, while counties with more choice tended to have somewhat more dispersal among the various types of institutions (e.g., Essex).

Of course, not all New Jersey residents pursue their higher education in-state. In fact, as illustrated in Chapter 2, New Jersey had the second largest number of out-migrating first-time freshmen of any state in Fall 1994 according to statistics compiled by NCES — over 24,000. When adjusting for inmigrating first-time freshmen, New Jersey led the nation in Fall 1994 in terms of being a net "exporter" of students to other states.

Exhibit 4-22 shows the top 20 out-of-state institutions attended by first-time, full-time freshmen from New Jersey in Fall 1994. These institutions accounted for one-fourth of the total number of outmigrating New Jersey new freshmen. Over one-half of the institutions are in the border states of New York, Pennsylvania, and Delaware, and several of these institutions (including the top two) are located in counties directly bordering New Jersey.

In short, those high school graduates that do decide to go out of state for college are likely to do so in a neighboring state. Further, the wide dispersion of New Jersey students among several institutions in general would suggest that personal factors and not specific programs or curricula are playing a significant role in the student's decision to leave the state.

EXHIBIT 4-22
TOP 20 OUT OF STATE INSTITUTIONS ATTENDED BY FIRST-TIME, FULL-TIME FRESHMEN FROM NEW JERSEY, FALL 1994

Institution	State	Control/Type	Number	% of Total
University of Delaware	DE	Public 4-Year	689	2.9%
New York University	NY	Private 4-Year	426	1.8%
Villanova University	PA	Private 4-Year	421	1.7%
U. of Maryland - College Park	MD	Public 4-Year	353	1.5%
University of Pennsylvania	PA	Private 4-Year	348	1.4%
Boston University	MA	Private 4-Year	327	1.4%
U. of Massachusetts - Amherst	MA	Public 4-Year	307	1.3%
West Virginia University	WV	Public 4-Year	300	1.2%
Penn State University	PA	Public 4-Year	267	1.1%
Lehigh University	PA	Private 4-Year	266	1.1%
Fashion Institute of Tech.	NY	Private 4-Year	256	1.1%
Johnson and Wales University	RI	Private 4-Year	234	1.0%
Drexel University	PA	Private 4-Year	233	1.0%
Syracuse University	NY	Private 4-Year	228	0.9%
Cornell University	NY	Private 4-Year	220	0.9%
University of Scranton	PA	Private 4-Year	214	0.9%
Boston College	MA	Private 4-Year	204	0.8%
University of Michigan	MI	Public 4-Year	192	0.8%
George Washington University	DC	Private 4-Year	185	0.8%
Virginia Tech	VA	Public 4-Year	174	0.7%
Subtotal - Top 20			**5,844**	24.2%
All Others			**18,308**	75.8%
Total			**24,152**	100.0%

Source: NJ Commission on Higher Education.

4.5 *Higher Education Attendance Patterns of New Jersey Residents by Level of Academic Preparation*

This section looks at the attendance patterns of New Jersey residents by level of academic preparation based on first-time, full-time freshmen. Exhibit 4-23 shows the SAT verbal and math distributions of 1996 resident first-time, full-time freshmen compared with the score distributions of 1996 New Jersey high school graduates who took the SAT but did not enroll in a New Jersey institution.[7] The participation rate at in-state institutions for residents is also shown in the graphs.

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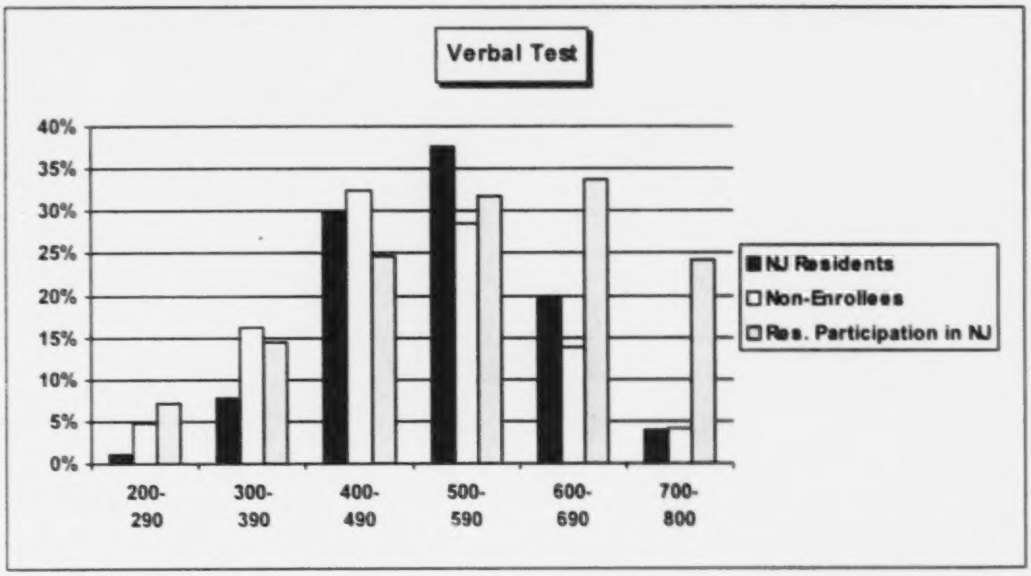
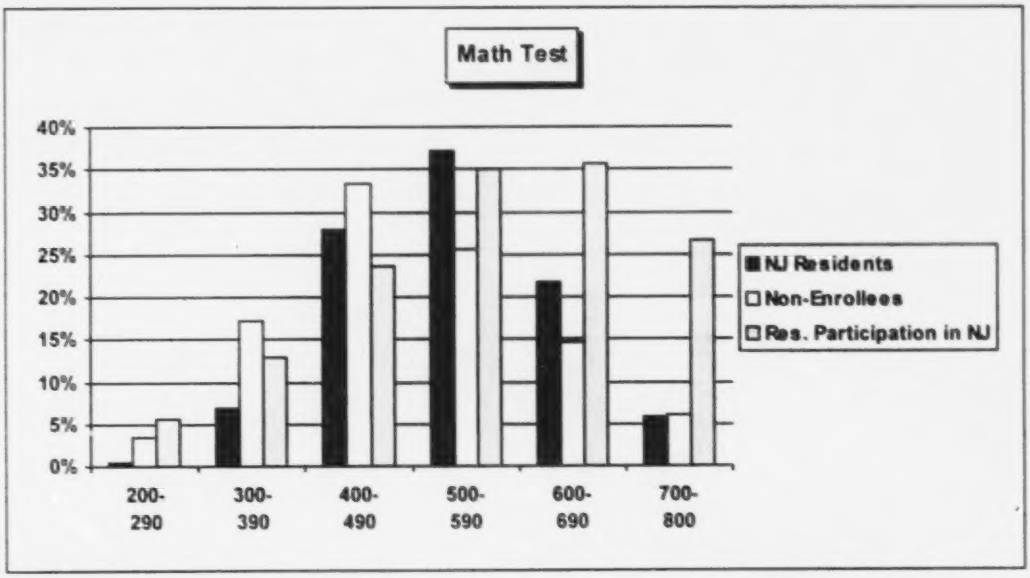
[7] Detailed data by type of institution are preserved in Appendix C.

EXHIBIT 4-23
SAT SCORE DISTRIBUTIONS AND PARTICIPATION RATE 1996 FIRST-TIME, FULL-TIME FRESHMEN WHO ARE NJ RESIDENTS



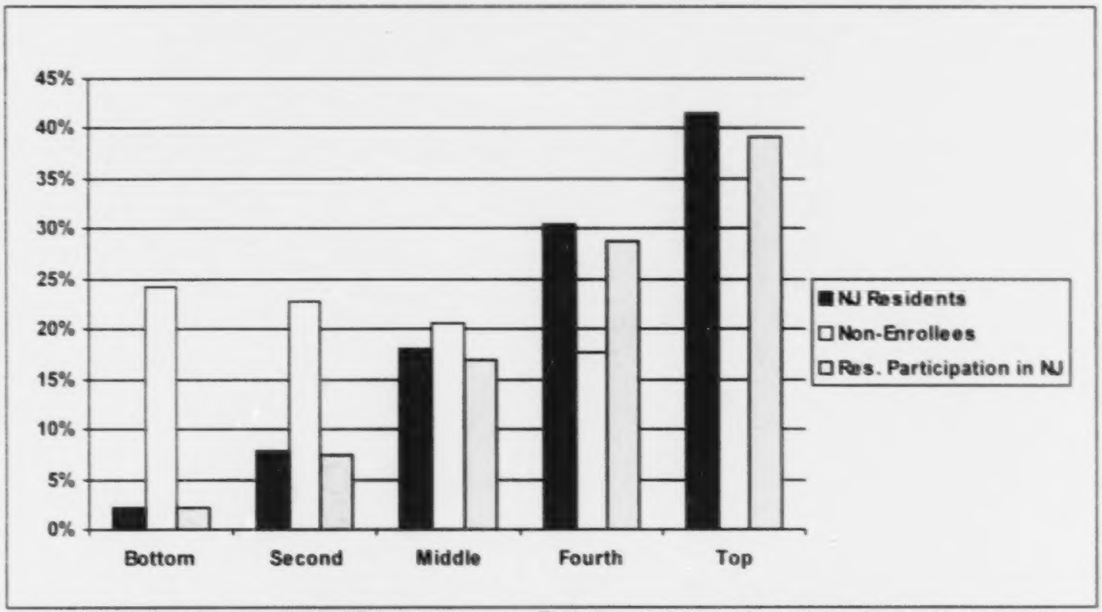


Sources: NJ Commission on Higher Education; The College Board. Excludes students with no score reported.

While more than half of all New Jersey resident freshmen scored 500 or higher on the verbal and math portions of the SAT, only a third or fewer of all New Jersey test takers at those levels remained in state to attend college suggesting that the higher scoring test-takers are more likely to enroll at an out of state institution.

Exhibit 4-24 shows the high school rank distribution of 1996 estimated resident first-time, full-time freshmen compared with that for high school graduates who did not enroll at an in-state institution.[8] As indicated, the majority of New Jersey resident freshmen are drawn from the top 40 percent of all high school graduates. Likewise, the participation rate is higher at the upper quintiles. However, even at the top quintiles, only 40 percent of New Jersey high school graduates remain in-state.

EXHIBIT 4-24
HIGH SCHOOL RANK DISTRIBUTIONS AND PARTICIPATION RATE 1996 FIRST-TIME, FULL-TIME FRESHMEN WHO ARE NJ RESIDENTS



Source: NJ Commission on Higher Education reports. Excludes students with no high school rank reported.

The discussion on the enrollment of high-achieving students is incomplete without information on New Jersey's current efforts to attract these students through merit scholarships. The state currently ranks ninth nationally in total dollars, approximately $7.5 million annually, awarded for undergraduate merit scholarships. The state's efforts to recruit these students is particularly notable since New Jersey ranks 16th nationally in the number of full-time undergraduates. In addition to these funds, a pilot project was introduced for the 1997-98 academic year to further fund scholarships for outstanding scholars. The program provides $3.0 million annually in Fall 1997 to fund additional merit scholarships for students, drawn from 6,600 qualifying students or 10 percent of the annual pool of high school graduates. One hundred eighty-seven (187) additional students were recruited at an annual cost of $16,275 per student.

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[8] Ibid.

4.6 Trends in Enrollment

Overall Enrollment Trends

A final demand driver examined here is the issue of student enrollment. Exhibit 4-25 shows the trends in fall enrollment by type of institution between 1990 and 1996. Overall, enrollment in higher education institutions in New Jersey peaked in 1993, at almost 343,000 and has been declining since. In 1996, enrollment was down 4.3 percent from this peak. Other observations include the following:

- Enrollment peaked in 1993 for community colleges and four-year private institutions. Since then, enrollment at community colleges has steadily declined; 1996 enrollment was down 9.2 percent from 1993. Enrollment at private institutions also declined from 1993 to 1995, but then increased from 1995 to 1996; however, 1996 enrollment was still down from 1993.
- Enrollment peaked in 1992 for four-year public and private institutions. Enrollment at four-year public institutions has declined ever since and is currently down 1.6 percent from the 1992 high and is actually less than 1990 enrollment. Enrollment at proprietary institutions also declined from 1992 to 1995, but showed a great increase from 1995 to 1996; enrollment in these institutions is at a seven-year high of 5,059.

EXHIBIT 4-25
ENROLLMENT TRENDS, FALL 1990 - FALL 1996
ALL INSTITUTION TYPES

Sector	Fall Semester							% Change
	1990	1991	1992	1993	1994	1995	1996	1990-96
Four-Year Public	137,691	138,129	139,672	138,391	136,654	137,829	137,493	-0.1%
% of total	42.5%	41.3%	40.7%	40.4%	40.7%	41.4%	41.9%	
Private Non-Profit	59,011	59,724	60,303	60,534	59,107	58,149	58,474	-0.9%
% of total	18.2%	17.9%	17.6%	17.7%	17.6%	17.5%	17.8%	
Community Colleges	123,910	132,599	138,713	139,970	135,766	133,240	127,103	2.6%
% of total	38.2%	39.7%	40.5%	40.8%	40.5%	40.0%	38.7%	
Proprietary	3,674	3,954	4,080	4,009	3,844	3,521	5,059	37.7%
% of total	1.1%	1.2%	1.2%	1.2%	1.1%	1.1%	1.5%	
Total	**324,286**	**334,406**	**342,768**	**342,904**	**335,371**	**332,739**	**328,129**	**1.2%**

Source: IPEDS

Undergraduate Enrollment by Student Level[9]

Exhibit 4-26 shows the total undergraduate enrollment in New Jersey's institutions overall by student level for the past seven years. As the exhibit shows, overall undergraduate enrollment has declined since the mid-90s. Lower division enrollments have also declined. The majority of lower division students are at community colleges, although lower-division students at four-year institutions have declined since the mid-1990s as well. Upper division enrollment has remained relatively stable. The enrollment decline at the lower level is certainly related in part to the decline in public high school graduates throughout the state during the late 1980s and early 1990s, as described earlier in this chapter. It is possible that this trend may reverse itself in the future given the projected increase in New Jersey high school graduates.

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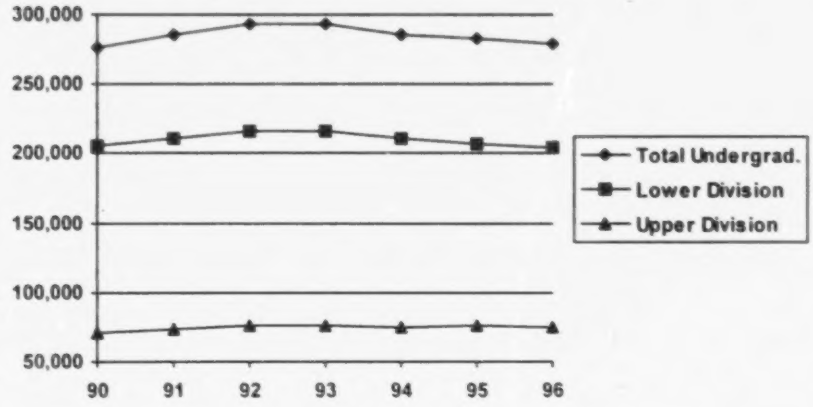
[9] Detailed data for the remaining sections of this chapter are included in Appendix D

Part of the enrollment decline at the lower level may also be related to the rebounding state economy. Community colleges (and community college students) are especially sensitive to changes in the economy; their enrollments (especially part-time) are inversely related to the strength of the economy. This is less so at the four-year institutions where (primarily full-time) students have made much more of an investment of time and resources in their education and may be less likely to "stop out" or drop out.

EXHIBIT 4-26
UNDERGRADUATE ENROLLMENT BY LEVEL
FALL 1990 TO FALL 1996

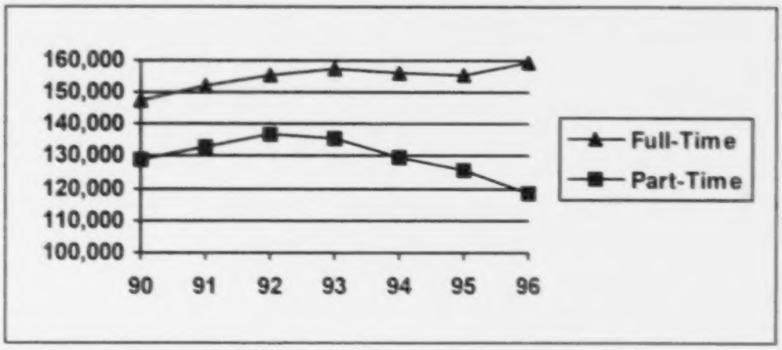


Source: IPEDS (includes proprietary inst.)

Undergraduate Enrollment by Part-Time/Full-Time Status

Exhibit 4-27 shows the trend in undergraduate enrollment by part-time or full-time status. As indicated, the majority of students are enrolled full-time. Part-time enrollment has declined since the early 1990s, while the number of full-time students is at its highest level in the past seven years. Again, the decline in part-time students is likely related to the state's improving economy during this period.

EXHIBIT 4-27
UNDERGRADUATE ENROLLMENT BY PART-TIME/FULL-TIME STATUS
FALL 1990 TO FALL 1996

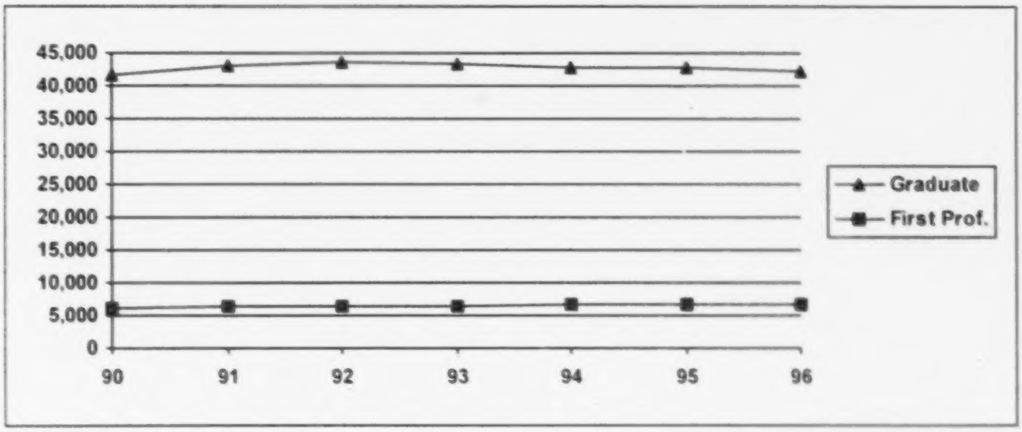


Source: IPEDS

Graduate and First Professional Enrollment

Overall enrollment at the graduate level has declined slightly since 1992 to just over 42,000. Slightly less than two-thirds of the graduate enrollment is at public institutions in the state. Overall, first professional enrollment is currently at around 6,600, where it has been the past three years. Slightly more than half of this enrollment is at public institutions in the state. Given the consistent entering class sizes of most professional programs and the tendency to be full-time programs of study, there would be an expectation that overall professional programs enrollment in New Jersey would remain relatively stable, unless there were an event such as the establishment or elimination of a program.

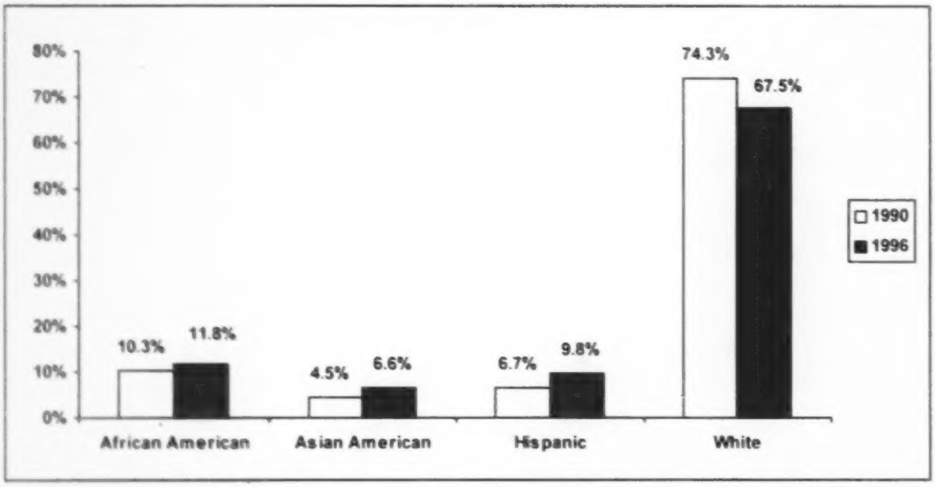
EXHIBIT 4-28
GRADUATE AND FIRST PROFESSIONAL ENROLLMENT
FALL 1990 TO FALL 1996



Enrollment by Racial/Ethnic Category

Exhibit 4-29 presents information on the changes in the overall proportion of the student population by racial ethnic category between 1990 and 1996. Overall, white students constitute a lower proportion of the student population now than in 1990, while the non-white student population is increasing. Thus, the student population is becoming somewhat more diverse, although whites still represent the majority of the student body. The participation of African-American students is still at a somewhat lower rate than their overall representation in the state's population (14.4%), although it has increased. Likewise, the proportions of Asian Americans and Hispanic students enrolled at New Jersey colleges and universities have also grown substantially during this period. These trends are a reflection of the increasing diversity of New Jersey's population.

EXHIBIT 4-29
PROPORTION OF TOTAL ENROLLMENT
BY SELECTED RACIAL/ETHNIC CATEGORIES
FALL 1990 AND FALL 1996



4.7 *Summary and Implications of Demand Indicators*

The data in this chapter provide a mixed picture as to current and future demand for higher education in New Jersey. While the number of high school graduates statewide has been declining, it is projected to grow over the next several years. However, the intentions of current graduates (combined with past and current out-migration patterns) indicate that a significant proportion are likely to decide to pursue their education outside of New Jersey. The bulk of those students who do stay in New Jersey tend to enroll in public colleges and universities.

At the same time, occupational projections for the state indicate that several of the "growth occupations" will require at least some level of higher education for entry-level positions, primarily in the business services and health services related occupations. Affected employers in the state would need to look outside of New Jersey if there were an insufficient number of qualified in-state candidates. It is certainly possible that some of those students who leave the state to attend college elsewhere may be qualified for these positions, and that some of these are enticed to come back to New Jersey once they have completed their degrees. The state has a past pattern of being a net "importer" of college graduates, some of whom are likely to be New Jersey natives. Employers can also meet these needs by providing further education and training opportunities for their current employees.

Overall enrollment has been declining at New Jersey institutions since the early 1990s, which could reflect the economic resurgence of the state as well as the ripple effect of earlier downturns in high school graduates statewide. At the undergraduate level, lower division enrollments have been declining while upper division enrollment has remained relatively stable. However, assuming that the same proportion of high school graduates continues to enroll in New Jersey institutions, there will likely be some increase in lower division enrollment over the next several years, given the projected increase in high school graduates.

In summary, it is likely that statewide demand for higher education in the future will at least remain stable. The next chapter addresses the other side of the capacity equation: supply and access.

5.0 ISSUES OF HIGHER EDUCATION SUPPLY AND ACCESS

This chapter turns from the indicators of demand for higher education to the issues of higher education supply and access. Specifically, this chapter addresses the following supply/access issues:

- Higher Education Institutions in New Jersey
- Degree Programs Offered, Enrollment and Degrees Granted
- Other Program Delivery Mechanism
- Instructional Efficiency and Productivity
- Physical Capacity of the System

5.1 Higher Education Institutions in New Jersey

Exhibit 5-1 shows the number of institutions (including both main and branch campuses) by type located in each county. As indicated, every county but Cape May and Hunterdon has at least one higher education institution physically located within its borders. However, Hunterdon County shares sponsorship of Raritan Valley Community College with Somerset County; the college is virtually located on the border between the two counties. Together, these 75 campuses served over 328,000 students in Fall 1996, with the largest single share being accounted for by the community colleges.

With the exception of community colleges, which are located throughout the state, the state's higher education institutions tend to be located in the northern and central counties, which is also where two-thirds of the state population is located as well. Essex County, the second most populous county in the state, leads the state with 10 campuses within its borders, including three public research universities. A notable exception to this pattern is Camden County in the south, which has six institutions, including one Rutgers and two UMDNJ campuses.

EXHIBIT 5-1
NUMBER OF HIGHER EDUCATION INSTITUTIONS BY COUNTY AND TYPE (MAIN AND BRANCH CAMPUSES)

	Public Research U.	State Coll. & U.	Community Colleges	Ind. Inst (Pub. Mission)	Proprietary/ Religious	Total
New Jersey	**10**	**10**	**26**	**19**	**13**	**78**
Atlantic	0	1	1	1	0	3
Bergen	0	1	1	3	1	6
Burlington	0	0	3	0	0	3
Camden	3	1	2	0	0	6
Cape May	0	0	0	0	0	0
Cumberland	0	0	1	0	0	1
Essex	3	1	2	3	1	10
Gloucester	0	1	1	0	0	2
Hudson	0	1	1	2	0	4
Hunterdon	0	0	0	0	0	0
Mercer	0	2	2	2	1	7
Middlesex	2	0	1	1	4	8
Monmouth	0	0	1	1	1	3
Morris	1	0	1	4	2	8
Ocean	0	0	1	1	1	3
Passaic	0	1	1	0	1	3
Salem	0	0	1	0	0	1
Somerset	0	0	1	0	1	2
Sussex	0	0	1	0	0	1
Union	1	1	3	0	0	5
Warren	0	0	1	1	0	2

Sources: NJ Commission on Higher Education, 1996 Systemwide Accountability Report, April 1996; NJ Commission on Higher Education Off-Campus Program Survey, 1997. A "branch campus" is defined as a physical facility located at a place other than the institution's principal campus offering one or more complete programs leading to a credit bearing certificate, degree or diploma without regard to the number of courses and course enrollments per academic year. Branch campus establishment and closure requires approval by the NJ Commission on Higher Education (N.J.A.C. 9:1-1.7).

Only Essex County has at least one of each type of institution located within its borders. Ten other counties (Atlantic, Bergen, Camden, Essex, Gloucester, Hudson, Mercer, Middlesex, Passaic, and Union) have a community college plus a state college or public research university. Viewed from another perspective, given the compact nature of the state, a sizable proportion of the state's population has at least two institutions within driving distance.

5.2 Overview of Degree Programs and Degrees Conferred

Exhibit 5-2 shows the degree and certificate programs offered by type of institution and level of degree. New Jersey institutions offer almost 3,000 degree and certificate programs. Two-thirds of the degree and certificate programs are at public institutions (which account for four-fifths of the enrollment and three-fourths of the degrees awarded statewide), with virtually all of the remaining programs at private four-year institutions. Additionally:

- Approximately two-fifths of all degree and certificate programs are at four-year public institutions (public research universities and state colleges and universities), and over one-quarter are at the community colleges.
- One-third of all programs are at the baccalaureate level, with slightly more being at public colleges and universities than at private four-year institutions.
- Public colleges and universities account for three-fifths of all graduate and professional programs, with private four-year institutions accounting for the remaining two-fifths.

EXHIBIT 5-2
DEGREE PROGRAMS BY TYPE OF INSTITUTION AND DEGREE LEVEL

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4-Year Public	14	557	386	127	6	1,090	71	1,161	39.4%
4-Year Private	28	444	254	84	8	818	122	940	31.9%
Comm. Colleges	495	-	-	-	-	495	313	808	27.4%
2-Year Private	3	-	-	-	-	3	1	4	0.1%
Proprietary	15	-	-	-	-	15	17	32	1.1%
Total	**555**	**1,001**	**640**	**211**	**14**	**2,421**	**524**	**2,945**	**100.0%**
% Total	**18.8%**	**34.0%**	**21.7%**	**7.2%**	**0.5%**	**82.2%**	**17.8%**	**100.0%**	

Note: "Four-Year Public" includes public research universities and state colleges and universities and "Four Year Private" includes private institutions with a public mission and specialized religious institutions. "Certificates" include both undergraduate and graduate-level certificates awarded.

Source: New Jersey Commission on Higher Education.

The issue of degrees produced by degree level is important when considering the current and projected occupational needs of the state in general by level of education and training. Exhibit 5-3 compares the projected average annual job openings through the year 2005 with the actual degrees conferred by level by all New Jersey institutions in 1995-96. Aside from the fact that this analysis considers only one year worth of degree data, this comparison should only be taken as a relative indication of fit for five important reasons:

- The total pool of eligible individuals for any given job in any given year includes both those currently in the labor market who have the necessary qualifications as well as those who have just received their degree;

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- New Jersey's position as a net importer of individuals with college degrees suggests that the state's labor market extends past the borders of the state;
- It is highly likely that at least a portion of those earning degrees will either continue their education, or seek employment in other states, effectively keeping them out of the pool of qualified individuals for these jobs;
- At the associate level, a significant proportion of the degrees granted (40%) are in fields consistent with the baccalaureate transfer function (i.e., liberal arts, social sciences, physical sciences) suggesting that most of these students are likely to go on for a bachelor's degree and not into the work force; and,
- It is likely that at least some of the degree recipients are already employed and are therefore unlikely to immediately change jobs after receiving their degree.

EXHIBIT 5-3
COMPARISON OF 1995-96 DEGREES CONFERRED WITH PROJECTED AVERAGE ANNUAL JOB OPENINGS BY LEVEL OF EDUCATION REQUIRED

	Associate	**Bachelors**	**Master's**	**Doctoral**	**First Professional**
Avg. Annual Job Openings by Level of Education Required	3,890	25,890	1,830	1,280	1,580
1995-95 Degrees Granted	13,009	24,587	8,486	1,068	1,694
Surplus/(Deficit)	*9,119*	*(1,303)*	*6,656*	*(212)*	*114*

Sources: NJ Dept. of Labor; NJ Commission on Higher Education.

Those caveats in mind, these data suggest that, assuming a relatively similar pattern of degree production in the future, a surplus of individuals are being granted associate, masters, and first professional degrees relative to projected annual job openings. On the other hand, there is a small deficit of bachelors and doctoral degrees being granted in the state relative to projected annual job openings.

Degree Programs By Discipline Area

Exhibit 5-4 provides the distribution of degree and certificate programs offered by New Jersey institutions of higher education by discipline area. The discipline areas have been developed by grouping the 41 discipline categories within the federal Classification of Instructional Programs (CIP) into 15 major discipline areas[1].

EXHIBIT 5-4
DEGREE PROGRAMS OFFERED BY DISCIPLINE AREA

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Agriculture/Biological Sciences	12	73	66	41	-	192	11	203	6.9%
Area-Multi Disc. Studies	11	54	10	4	-	79	8	87	3.0%
Business Management	129	84	49	4	-	266	149	415	14.1%
Communications	10	19	4	-	-	33	4	37	1.3%
Computer Science-Math	20	65	35	15	-	135	43	178	6.0%
Education	15	93	157	18	-	283	47	330	11.2%
Engineering-Architecture	88	56	69	44	-	257	68	325	11.0%
Foreign Languages	-	75	23	10	-	108	-	108	3.7%
Health Professions	104	60	32	5	4	205	58	263	8.9%
Law	14	1	1	-	3	19	8	27	0.9%
Liberal Arts-Philosophy-Rel	38	80	50	15	7	190	16	206	7.0%
Physical Sciences	18	72	34	18	-	142	8	150	5.1%
Social Sciences	5	148	60	23	-	236	10	246	8.4%
Vocational Trades	23	-	-	-	-	23	37	60	2.0%
Miscellaneous	68	121	50	14	-	253	57	310	10.5%
Total	**555**	**1,001**	**640**	**211**	**14**	**2,421**	**524**	**2,945**	**100.0%**

Source: New Jersey Commission on Higher Education.

- The single largest number of degree and certificate programs statewide are those in business management, which represent 14.1 percent of the total.
- Education represents 11.2 percent of the total number of degree and certificate programs, and the largest number of degree programs. It also accounts for one-quarter of the masters degree programs statewide.
- The largest number of bachelors programs is in the social sciences area.

Degrees Produced By Discipline Area

Exhibit 5-5 shows the degrees granted by major discipline area. As indicated:

- Business management accounts for the largest proportion of all degrees and certificates awarded at one-fifth of the total — approximately the same as nationally. It also accounts for one-quarter of all masters degrees awarded.
- Liberal arts-philosophy-religion represents 15.1 percent of the total (*compared with 13.3% nationally*), with the majority of the degrees granted in this area at the associate level.

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[1] A crosswalk between the CIP groupings and the discipline areas presented here is included in Appendix E.

- Social sciences (e.g., history, psychology, economics) represents 12.8 percent of the total (*compared with 10.9% nationally*), and is the single largest source of baccalaureate degrees granted.
- Health professions represents 9.6 percent of the total — the same as nationally — with the majority of degrees granted in this area at the associate level.

EXHIBIT 5-5
DEGREES GRANTED BY DISCIPLINE AREA AND LEVEL
1995-96

[illegible]	Associate	Bachelor	Master	Doctorate	First Prof.	Subtotal Degrees	Certif.	Grand Total	% Total
Agriculture/Biological Sciences	76	1,749	310	187	-	2,322	17	2,339	**4.6%**
Area-Multi Disc. Studies	332	484	49	12	-	877	5	882	**1.7%**
Business Management	2,843	4,595	2,011	19	-	9,468	598	10,066	**19.8%**
Communications	64	1,078	107	-	-	1,249	1	1,250	**2.5%**
Computer Science-Math	192	1,002	567	59	-	1,820	24	1,844	**3.6%**
Education	274	1,995	2,360	58	-	4,687	243	4,930	**9.7%**
Engineering-Architecture	547	1,557	721	198	-	3,023	335	3,358	**6.6%**
Foreign Languages	-	269	57	27	-	353	-	353	**0.7%**
Health Professions	2,399	1,229	354	2	458	4,442	456	4,898	**9.6%**
Law	218	12	-	-	846	1,076	87	1,163	**2.3%**
Liberal Arts-Philosophy-Rel	4,499	2,165	354	161	390	7,569	139	7,708	**15.1%**
Physical Sciences	100	455	144	126	-	825	1	826	**1.6%**
Social Sciences	195	5,629	391	150	-	6,365	25	6,390	**12.5%**
Vocational Trades	72	-	-	-	-	72	38	110	**0.2%**
Miscellaneous	1,198	2,368	1,061	69	-	4,696	125	4,821	**9.5%**
Total	**13,009**	**24,587**	**8,486**	**1,068**	**1,694**	**48,844**	**2,094**	**50,938**	**100.0%**

Source: New Jersey Commission on Higher Education data.

The issue of degrees produced by discipline area is especially important in considering the future labor market needs of the state. Unfortunately, in addition to the four caveats mentioned earlier with regard to the overall comparison of degrees produced and job openings by level of education required, there is no way to draw a perfect crosswalk between specific occupations and degree programs, given that the requirements for many entry-level positions are so broad that employers can draw from many different disciplinary backgrounds.

However, there are some occupations (primarily in the professional and technical fields) that do require a specific degree that can provide a reference point. For example, if we look at the occupations with the greatest annual job openings (Exhibit 4-13 in Chapter 4), we can see that marketing and sales occupations are expecting over 2,500 annual job openings. While some of these positions will likely not require any higher education and training, those that do will tend to hire individuals with business degrees. Even with the unlikely assumption that all of the job openings would go to new college graduates (as opposed to those with some work experience) and discounting by half the number of degrees produced in this area to account for outmigration and further education, it would appear that there would be a rich statewide supply of college graduates with business degrees to choose from on an annual basis.

On the other hand, we are presented with a different picture when looking at the demand for systems analysts. It has been projected that there will be over 2,200 job openings annually for systems analysts. These occupations typically require individuals with computer science and/or mathematics backgrounds at all degree levels. Even assuming that all of the 1,800 individuals graduating with computer science/math degrees were planning to enter the job market for these types of positions, it would appear that the supply/demand fit was fairly tight for this occupational area. Thus, computer science might be an area the state should consider growing in order to meet future occupational demands, especially given that this was also mentioned during the public hearings as well.

Two other occupational areas mentioned specifically during the public hearings as "high demand" were speech pathology and engineering. Overall, we found no specific evidence that the projected demand for graduates from these fields could not be met through the current system. We would suggest, however, that there is a general need for the state to continue to review occupational demand and supply (including data on degrees granted in relevant areas) on a periodic basis, in order to take proactive steps to alleviate specific instances of demand where they exist.

Degrees Conferred by Type of Institution

Exhibit 5-6 shows the degrees and certificates conferred by type of institution and level of degree awarded for 1995-96. New Jersey institutions awarded almost 49,000 degrees and certificates in 1995-96. Public institutions, which represent four-fifths of New Jersey's total higher education enrollment, accounted for almost 75 percent of these degrees and certificates. Additionally:

- Approximately one-half of all degrees and certificates were awarded by four-year public institutions (public research universities and state colleges and universities.) One-quarter of all degrees and certificates were awarded by the community colleges.
- One-half of all degrees and certificates awarded were at the baccalaureate level — approximately the same as occurs nationally. The majority of these were awarded by public colleges and universities.
- Public and private institutions awarded approximately the same number of total graduate and professional degrees.
- New Jersey institutions also awarded over 1,600 non-degree certificates which accounted for 4.1 percent of the total awards in 1995-96.

5.3 Access to Degree Programs: On- and Off-Campus

A critical issue related to both access to degree programs as well as the ability of the state's higher education institutions to meet the state's anticipated occupational needs is the breadth of degree program offerings available at the county level. This section provides information on both on-campus and off-campus degree programs.

EXHIBIT 5-6
DEGREES CONFERRED BY INSTITUTIONAL TYPE AND LEVEL
1995-96

Degrees Conferred	Four-Year Public	Private Non-profit	Community Colleges	Proprietary	Total	% Total
Associates	284	281	11,715	729	**13,009**	**25.5%**
Bachelors	18,035	6,552	-	-	**24,587**	**48.3%**
Masters	4,840	3,646	-	-	**8,486**	**16.7%**
Doctorate	580	488	-	-	**1,068**	**2.1%**
First Prof.	894	800	-	-	**1,694**	**3.3%**
Subtotal Degrees	**24,633**	**11,767**	**11,715**	**729**	**48,844**	**95.9%**
Certificates	282	460	557	795	**2,094**	**4.1%**
Grand Total	**24,915**	**12,227**	**12,272**	**1,524**	**50,938**	**100.0%**
% Total	**48.9%**	**24.0%**	**24.1%**	**3.0%**	**100.0%**	

On-Campus Degree Programs

One measure of both access and breadth is the ratio of program offerings to college-age population. Exhibit 5-7 shows the on-campus degree program offerings per 100,000 15-44 year old population by county for all degree/certificate programs and for selected specific fields of study. The four specific fields of study highlighted — computer science, health professions, engineering, and business management — were selected given that they correspond to occupational areas projected to grow in the future throughout the state. Exhibit 5-8 provides the same data, but in a geographic form.

Residents in both Essex and Mercer counties are consistently provided high levels of on-campus program offerings relative to the state average across the four specific discipline areas as well as with overall degree/certificate program offerings. As indicated in the map, the strip from Mercer up to Bergen County generally provides a high level of access overall.

Residents in six counties — Ocean, Passaic, Camden, Sussex, Monmouth, and Burlington — are provided consistently low levels of on-campus program offerings relative to the state average across the four specific discipline areas as well as with overall degree/certificate program offerings. Monmouth, Ocean, and Burlington are contiguous creating a regional pattern of low program access as are Sussex and Passaic counties. As was illustrated in Chapter 4.0, the proportion of Monmouth and Burlington County high school graduates intending to remain in-state to attend college was below the state average but above average in the other counties. It is difficult to state whether the intentions of high school graduates from Monmouth and Burlington are related to this access issue, or is due to other factors such as personal choice or Burlington's proximity to the Philadelphia higher education market place.

EXHIBIT 5-7
DEGREE PROGRAMS PER 100,000 15-44 POPULATION BY COUNTY ALL PROGRAMS AND SELECTED DISCIPLINES
(Counties in Descending Order According to All Degree Programs)

	All Degree Programs	[illegible]	[illegible]	[illegible]	[illegible]
Mercer	259.9	5.9	8.5	13.7	33.4
Essex	165.1	9.4	25.1	10.8	18.8
Middlesex	127.3	3.0	5.7	11.0	6.5
Gloucester	116.8	5.4	5.4	5.4	15.4
Salem	96.6	3.7	7.4	-	22.3
Hudson	92.4	4.9	6.1	21.3	14.5
Warren	88.3	4.8	2.4	-	21.5
State Average	**83.0**	**3.2**	**7.4**	**4.9**	**11.0**
Bergen	70.2	2.2	7.2	1.9	11.4
Morris	69.4	1.5	2.5	0.5	6.0
Cumberland	62.9	-	5.0	-	16.6
Atlantic	56.4	4.8	9.6	-	8.6
Union	54.5	0.9	12.0	0.5	6.0
Ocean	49.0	2.3	1.2	0.6	5.8
Passaic	48.9	1.0	4.8	-	10.0
Camden	44.3	1.8	7.1	0.4	8.9
Sussex	38.5	3.1	3.1	-	7.7
Monmouth	37.9	1.2	3.5	1.6	3.9
Somerset	34.3	4.1	3.3	0.8	11.4
Burlington	26.5	0.5	2.7	-	8.7
Cape May	-	-	-	-	-
Hunterdon	-	-	-	-	-

Note: Includes all levels of on-campus degree and certificate programs.

Sources: NJ Commission on Higher Education; NJ Department of Labor.

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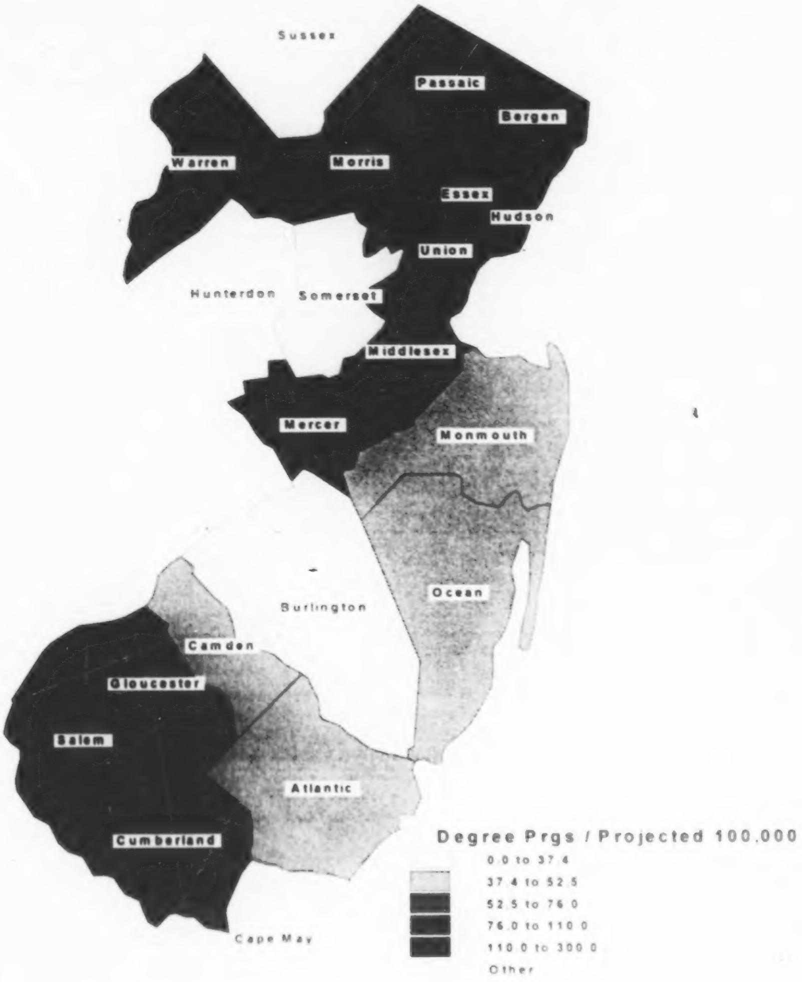
EXHIBIT 5-8
DEGREE PROGRAMS PER 100,000 15-44 POPULATION BY COUNTY


Sussex
Passaic
Bergen
Warren
Morris
Essex
Hudson
Union
Hunterdon
Somerset
Middlesex
Mercer
Monmouth
Ocean
Burlington
Camden
Gloucester
Salem
Atlantic
Cumberland
Cape May
Degree Prgs / Projected 100,000
0.0 to 37.4
37.4 to 52.5
52.5 to 76.0
76.0 to 110.0
110.0 to 300.0
Other

76

Given that neither county has an institution located within its borders, Cape May and Hunterdon counties have no on-campus degree program offerings. However, it should be noted that this is in many ways an artificial measure for Hunterdon County, given that it shares a community college (Raritan Valley) with Somerset County.

For those counties with low or no program offerings, this means that county residents may have fewer choices locally than those in counties with higher levels of program offerings. It might also mean that access to certain programs (including the four discipline areas within Exhibits 5-7) is restricted for those residents who want to attend a local institution. In those circumstances, county residents interested in pursuing a higher education have the option of either traveling outside the county (either in-state or out-of-state) to attend an institution which offers the same program in which they are interested, or not attending any institution.

Off-Campus Coursework

In addition to their main on-campus offerings, New Jersey institutions also provide significant coursework in off-campus locations to meet the needs of placebound individuals and working adults. Exhibit 5-9 shows the distribution of enrollments in off-campus courses by type of institution, county and level of instruction for 1996-97. There were over 91,700 student enrollments (duplicated) in 5,500 off-campus course sections statewide during 1996-97. Four out of every five enrolled students were in undergraduate level courses, and almost two-thirds of the enrollment was in courses delivered by community colleges.

As indicated, enrollment in off-campus offerings also varies among the counties. Interestingly, Burlington and Camden counties had the two highest levels of enrollment in off-campus programs, but both were well below the state average in on-campus degree program offerings. However, this relationship does not necessarily hold when looking at the other counties that are both above and below the state average in terms of on-campus offerings. Thus, it is difficult to state conclusively that demand for off-campus courses in any given county is inversely related to the level of availability of on-campus programs. Most likely, it is related to the specific courses offered and the time and location of these offerings.

5.4 Current Efforts to Extend Access to Higher Education

In addition to the on- and off-campus programs described in the previous section, there are various other efforts within the state to extend access to higher education opportunities for special populations such as high school students, minority and economically disadvantaged individuals, and placebound individuals. Four examples in particular are described in the following subsections:

College Coursework Offered at New Jersey High Schools

A recent survey by the Commission of all New Jersey institutions (with the exception of the institutions that train clergy) indicated that one-half of the 50 institutions surveyed had offered one or more courses for college credit at a high school site during the past five years. Of all the sectors, the public universities and the community colleges were the most active in delivering college credit. The survey also indicated that many institutions were seeing an increase in demand for college credit courses among high school students. This trend is consistent with a general national pattern of high school students wanting to get a head start on college for both academic and financial reasons.

EXHIBIT 5-9
DISTRIBUTION OF ENROLLMENT IN OFF-CAMPUS INSTRUCTIONAL PROGRAMS BY COUNTY, INSTITUTIONAL TYPE, AND LEVEL OF INSTRUCTION
1996-97

	Community Colleges	State Colls. & Univ.	Public Res. Universities	Independent Institutions	Proprietary Institutions	Total Enrollment	Level of Instruction		
							Undergrad.	Graduate	Mixed
New Jersey	**63.3%**	**10.4%**	**7.2%**	**9.3%**	**9.8%**	**91,269**	**80.1%**	**13.8%**	**6.1%**
Atlantic	82.1%	7.0%	7.4%	3.5%	0.0%	3,182	86.7%	10.5%	2.8%
Bergen	3.9%	7.8%	5.7%	29.7%	52.9%	7,682	58.0%	16.3%	25.7%
Burlington	94.9%	0.6%	3.9%	0.6%	0.0%	12,296	94.9%	1.7%	3.4%
Camden	72.5%	21.5%	5.7%	0.3%	0.0%	15,643	91.3%	8.0%	0.7%
Cape May	88.6%	5.6%	4.5%	1.3%	0.0%	2,310	90.5%	8.2%	1.3%
Cumberland	73.3%	26.7%	0.0%	0.0%	0.0%	262	73.3%	26.7%	0.0%
Essex	80.2%	13.3%	1.7%	4.8%	0.0%	11,001	90.5%	7.9%	1.6%
Gloucester	62.2%	26.7%	9.0%	2.1%	0.0%	622	73.3%	16.9%	9.8%
Hudson	23.0%	38.9%	0.8%	37.2%	0.0%	1,389	41.7%	43.6%	14.8%
Hunterdon	79.5%	3.2%	5.8%	11.5%	0.0%	278	79.5%	20.5%	0.0%
Mercer	82.6%	0.0%	15.7%	1.7%	0.0%	6,833	84.8%	15.2%	0.0%
Middlesex	19.8%	2.4%	4.7%	9.3%	63.7%	7,673	86.3%	13.0%	0.8%
Monmouth	74.3%	5.1%	2.6%	18.1%	0.0%	6,229	82.3%	13.5%	4.2%
Morris	34.1%	18.2%	14.4%	33.4%	0.0%	3,216	37.9%	53.5%	8.5%
Ocean	79.7%	13.3%	0.6%	6.3%	0.0%	4,241	87.4%	5.6%	7.1%
Passaic	36.6%	22.4%	4.0%	37.1%	0.0%	1,614	44.7%	48.0%	7.4%
Salem	87.5%	12.5%	0.0%	0.0%	0.0%	337	87.5%	12.5%	0.0%
Somerset	24.1%	4.6%	33.5%	37.8%	0.0%	1,579	28.9%	62.2%	8.9%
Sussex	53.1%	30.2%	5.8%	11.0%	0.0%	885	53.6%	39.9%	6.6%
Union	46.7%	11.6%	35.6%	6.1%	0.0%	3,992	51.1%	16.8%	32.1%
Warren	0.0%	100.0%	0.0%	0.0%	0.0%	5	0.0%	100.0%	0.0%

Source: NJ Commission on Higher Education survey of institutions, January 1997.

New Jersey College Bound Program

As one of its responsibilities, the Commission has oversight of a $3.0 million College Bound program, which funds 13 programs at NJ colleges and universities—enabling them to provide enrichment activities for urban/minority youth in the sixth through twelfth grades. The programs are intended to help these students complete secondary school and successfully pursue higher education in the sciences, mathematics, or technology. The program currently serves approximately 2,300 students, and institutional grants range from $42,400 to $938,700. A recent evaluation of the College Bound Program found that the program was generally effective and should be continued, but needed some "fine tuning" to ensure that it focused its limited resources on those students and activities where it could add the most value.

Educational Opportunity Fund (EOF)

The New Jersey EOF was created by the state Legislature in 1968 to ensure access to higher education for residents from economically and educationally disadvantaged backgrounds. The $32.8 million program provides financial assistance to individuals, and also funds a variety of campus-based adaptive and academic support services. Each participating institution sets specific criteria for student participation. Students must make satisfactory academic progress to continue in the program. According to data provided by EOF program administrators, 12,500 undergraduate students at 44 institutions participated in the program during Fall 1996. The racial/ethnic breakdown of the EOF population is: black - 43%; Hispanic - 28%; white/other - 22%; Asian - 7%. EOF students comprised over 12 percent of New Jersey's first-time full-time students statewide in Fall 1996, and are at their highest levels ever.

Tuition Aid Grants (TAG)

The purpose of the TAG program is to reduce or eliminate the tuition component of the cost of attending college for financially needy students. Historically, the program has attempted to: (1) provide the neediest students with awards and up to full tuition at public institutions or up to 50 percent of the average tuition at independent college and universities; and (2) provide other needy students who are eligible for partial awards with award increases designed to offset the impact of tuition increases. For FY 1997, the total TAG resources were approximately $145.2 million, which provided approximately 52,500 awards to New Jersey residents.

Use of Distance Learning and Instructional Technologies

Instructional technology and distance learning are emerging modes of instructional delivery that are being used to extend access to higher education beyond the classroom to the home and workplace. The New Jersey Commission on Higher Education recently conducted a technology survey of all of New Jersey's degree granting institutions which revealed several points regarding the current and potential use of instructional technology in New Jersey's institutions. This survey found that:

- 82 percent of responding institutions have interactive video classrooms.
- 78 percent have video conferencing.
- 65 percent offer instruction through distance learning.

Of the 18 responding institutions which do not currently offer distance learning, 13 plan to do so in the future.

In the realm of distance learning, a number of different methods were employed by the institutions, including:

- cable TV
- closed circuit TV
- broadcast TV
- video tape
- satellite connection (one-way video with two-way audio or PC link)
- desktop video conferencing (two-way video and audio)
- interactive video classrooms (two-way video and audio)

Exhibit 5-10 shows the number of responding institutions by type indicating the use of these technologies in off-campus instruction.

EXHIBIT 5-10
NUMBER OF INSTITUTIONS USING VARIOUS OFF-CAMPUS INSTRUCTIONAL LEARNING TECHNOLOGIES

Technology	Two-Year	Four-Year*	Total
cable TV	8	4	12
closed circuit TV	2	1	3
broadcast TV	3	4	7
video tape	12	14	26
satellite connection	2	3	5
desktop video conferencing	2	4	7
interactive video classrooms	8	14	22

*includes graduate schools

Source: NJ Commission on Higher Education.

As indicated, video tape is the dominant mode of technology used by New Jersey institutions to provide distance learning opportunities for students. This is likely due to the fact that this is a relatively inexpensive and "low tech" method compared with the other modes of technology shown. Several institutions are also using interactive video classrooms as well, which is reflective of the fact that over four-fifths of the institutions surveyed reported having video classrooms. The benefit of video tape is that students enrolled in such courses can use the tapes at any time of the day or night, providing significant flexibility for working adults. The downside is the lack of real-time interactive learning which is a benefit of video classrooms.

From a capacity standpoint, institutions are clearly able to serve a larger volume of students through video tape, although it may not be appropriate for entry-level courses or certain types of programs that require significant interaction between teachers and students. There is also a limit to the number of students who can be served through video classrooms, given both physical and fiscal constraints. In short, these emerging modes of instructional delivery are probably best viewed currently as important complements to traditional instructional delivery systems.

Related to these issues is the recent work of a task force that was established by the Commission and the President's Council to make recommendations regarding technology and institutional infrastructure. The work of this task force was conducted over a five month period and resulted in a number of key recommendations that were released in June 1997. A summary of these recommendations is presented below[2]:

- **Technology Infrastructure Fund Act**: The Commission should consider various criteria in reviewing institutional plans to use funds from the $50 million Higher Education Technology Fund[3] including: how the bond funds will advance an institution's long-range plan for technology; how the proposed connectivity and information technology will advance the institution's primary missions; how the institution will address technology training needs; and the source of revenue for matching funds.

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[2] Source: Report of the Higher Education Technology Task Force, June 1997.

[3] Legislation establishing this fund was signed by Governor Whitman in September 1997.

- **Distance Learning:** All New Jersey institutions and all out-of-state institutions with a physical presence in the state offering credit-bearing distance learning courses or programs should be subject to general licensure and program approval regulations. Consumer information pertaining to the accreditation status of the offering institution should be provided where the institution does not have a physical presence in the state. All new programs offered through distance learning by New Jersey institutions, or offered in New Jersey by out-of-state institutions with a physical presence in the state, should be subject to the same review and approval process applied to new programs offered through traditional delivery modes.
- **Recurring Technology Costs:** A subgroup of task force members should thoroughly investigate how other states fund recurring capital expenditures for technology, and make recommendations to the Commission and President's Council by December 1997.
- **Related Infrastructure Efforts:** The task force urges the Commission and the President's Council to continue to seek the inclusion of higher education in statewide technology infrastructure planning.

We have two specific comments regarding these recommendations. First, we concur that training needs should be considered as the Commission reviews each institution's proposed use of the Higher Education Technology Infrastructure funds. Faculty and staff training and development is as important as technology acquisition in the implementation of an institution's technology infrastructure. Lack of training and development opportunities, or lack of a plan for staff technology training and development would lead to lowered efficiency and effectiveness in the technology usage.

Second, while we concur that there needs to be an element of quality control and review in the development and offering of distance learning courses, we would suggest that both the Commission and President's Council need to be careful not to overregulate New Jersey institutions regarding this developing mode of instruction. Distance learning is a rapidly growing national and international marketplace, and institutions need the flexibility to respond quickly to the demands of New Jersey residents and employers in order to be competitive. Overregulation of this marketplace for New Jersey institutions will provide a disincentive to faculty and staff to develop distance learning-based programs and courses, and will pose a competitive advantage for out-of-state providers that do not have a physical presence in the state and who could conceivably be in a position to provide a more timely solution to consumer demand.

5.5 Instructional Efficiency and Productivity Issues

This section addresses an issue that is both related to the question of supply and capacity — instructional efficiency and productivity. Subissues addressed here include the overall enrollment levels of New Jersey institutions, program duplication, program enrollment, and instructional collaboration.

Enrollment Levels of New Jersey Institutions

The enrollment level of an institution of higher education has a direct impact on the cost — and ultimately the efficiency — of providing services. The terminology typically used to describe size-related effects on cost is "economy of scale." The concept of economy of scale refers to the phenomenon whereby the unit cost of producing a good or service decreases as the number of units produced (i.e., the scale of the operation) increases. This relationship has been established over the years in a variety of public- and private-sector settings. As applied to higher education, the economy of scale concept implies that the per-student cost would be expected to be lower at a larger institution than at a smaller institution, everything else being equal.

In 1986, Brinkman and Leslie reported on their summary analysis of several articles related to economy of scale for colleges and universities.[4] Their analysis differentiated by type of institution and found the following:

- For two-year colleges, the largest portion of any size-related economies for education and general (E&G) expenditures is generally realized by the time enrollment is in the range of 1,000 to 1,500 FTE students.
- For comprehensive four-year institutions, size-related economies are typically realized by the time enrollment reaches 3,000 to 4,000 FTE students.
- There was no evidence for economies of scale at public research universities.

Exhibit 5-11 shows the distribution of estimated FTE enrollments for the New Jersey community colleges and state colleges & universities (the EOS ranges found by Brinkman and Leslie for similar types of institutions are shaded).

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[4] "Economies of Scale in Higher Education: Sixty Years of Research," The Review of Higher Education, vol. 10, no.1, pp. 1-28.

EXHIBIT 5-11

DISTRIBUTION OF FALL 1996 FTE STUDENT ENROLLMENTS AT NEW JERSEY COMMUNITY COLLEGES AND STATE COLLEGES AND UNIVERSITIES

[illegible]	[illegible]	[illegible]
500 - 1,000	2	0
[illegible]	[illegible]	0
1,501 - 2,000	1	0
2,001 - 3,000	1	0
[illegible]	5	[illegible]
4,001 - 5,000	2	0
5,001 - 7,000	4	4
> 7,000	3	3
Total Institutions	**19**	**8**

# Excludes Edison State College.

Source: NJ Commission on Higher Education. Estimated FTE calculated by adding full-time student headcount enrollment to one-third of the part-time student headcount enrollment.

As indicated, two community colleges (Salem and Warren) fall below the range where past research has indicated that EOS have typically been realized for two-year institutions (1,000 to 1,500), and one community college (Sussex) falls within this range. With two exceptions, the remaining community colleges in the state have enrollment levels above the 3,000 FTE student threshold.

No state college or university has an enrollment below the range where past research indicated that EOS have typically been realized for comprehensive four-year institutions, although one institution (Ramapo) falls within this range. The remaining state colleges and universities have enrollments above the 5,000 FTE student level.

For the most part then, New Jersey institutions tend to operate at cost-efficient levels. One specific related issue that was raised during the course of this study was the question of whether the presence of three public universities in Newark (UMDNJ, Rutgers, and NJIT) was economically viable, or whether consolidation of some or all of the institutions might be justified. Our conclusion is that there does not appear to be any cost- or efficiency-based argument for such a consolidation.

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Consolidation is not warranted for the following reasons:

- There is no evidence of unnecessary program duplication among the three institutions. In fact, there are 40 separate collaborative degree programs currently in place involving these three universities and other institutions suggesting that collaboration is taking place naturally.
- Part of this lack of program duplication is due to the fact that each of these three institutions fills a very specialized programmatic niche. NJIT and UMDNJ provide specialized technical training in engineering and the health sciences respectively, while Rutgers-Newark provides courses of study in such areas as the liberal arts and sciences, business management, and law.
- Because NJIT, Rutgers, and UMDNJ have very specialized niches, they also have very different academic cultures. Meshing these three academic cultures would be a difficult and time-consuming process at best, and perhaps impossible. A further, and significant, logistical impediment is the complexity of addressing multiple collective bargaining units.
- The operating costs of these institutions are below those of their peers. A recent study released by the Commission indicated that the total unrestricted educational and general (E & G) cost per student of NJIT, Rutgers, and UMDNJ were 15% to 22% below those of their respective peers on average.[5]
- There would be significant dollar costs incurred and significant time spent trying to merge all of the various academic (e.g., registration, student records) and administrative systems (e.g., payroll) for even two of the three institutions. This is further complicated by the fact that each institution has its own governing board and separate administrative structures.
- Finally, any consolidation would need the approval of the Legislature and Governor given that there are statutory changes involved. Opening this highly sensitive issue to the political process could have unintended, and perhaps undesirable results.

Further, our understanding of the past experiences of other states that have attempted institutional consolidation suggests that mergers are always more costly in the end than initially anticipated. In short, we believe that there does not appear to be any programmatic basis for consolidation, and that any potential savings that might be gained through such action are greatly outweighed by the time, cost, and other practical difficulties involved in implementation.

Program Duplication

Another issue related to the overall efficiency of New Jersey's higher education delivery system is that of program duplication. Program duplication refers to the extent to which the same degree programs are offered at campuses around the state. This is an area of concern, given the need to utilize finite resources in the most efficient manner possible. High levels of duplication lead to inefficiencies and higher costs. For the purposes of this analysis we analyzed the frequency of specific degree program offerings by level of instruction among New Jersey's colleges and universities. The over 2,900 degree and certificate programs currently offered by New Jersey institutions cover 454 separate areas of study. Exhibit 5-12 illustrates the percentage of eligible institutions offering the same degree programs at the associate, bachelors, masters, and doctoral levels:

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[5] Source: NJ Commission Higher Education, Higher Education Costs and Revenues - The Second Annual Systemwide Accountability Report, May 1997.

EXHIBIT 5-12
FREQUENCY OF DEGREE PROGRAM OFFERINGS BY LEVEL
1996-97

	1 - 25% of Institutions	**26 - 50% of Institutions**	**51 - 75% of Institutions**	**76 - 100% of Institutions**	**Number of Pgm. Areas**
Associate	89.5%	7.8%	1.3%	1.3%	153
Bachelors	85.1%	7.0%	4.2%	3.7%	215
Masters	92.6%	6.9%	0.5%	None	217
Doctorate	83.1%	13.6%	3.4%	None	118

Source: NJ Commission on Higher Education data.

As indicated, the vast majority of specific degree programs are offered by 25 percent or fewer of the eligible institutions at each degree level. This would suggest that the program array currently offered by New Jersey's colleges and universities is not overly duplicative.

Of course, as indicated, there are a certain proportion of degree program areas offered by a majority of institutions in the state. Exhibit 5-13 provides a listing of the specific program areas offered by 50 percent or more of the institutions in the state at the associate, bachelors, master's, and doctoral level.

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EXHIBIT 5-13
DEGREE PROGRAM AREAS OFFERED BY MORE THAN 50 PERCENT OF NEW JERSEY INSTITUTIONS

Associate (n=32)	Bachelors (n=32)	Masters (n=30)	Doctorate (n=11)
General Studies (97%)	Computer Sci. (81%)	Business Admin. (57%)	Chem. Engin. (54%)
Law Enforcement (87%)	French (50%)		Civil Engin. (54%)
Resp. Ther. Tech. (50%)	Spanish (59%)		Elect. Engin. (54%)
Nursing - R.N. (56%)	English (66%)		Mech. Engin. (64%)
Business Admin. (78%)	Biology (94%)		
Secretarial Science (62%)	Mathematics (81%)		
	Philosophy (53%)		
	Chemistry (94%)		
	Physics (66%)		
	Psychology (87%)		
	Economics (62%)		
	History (78%)		
	Political Science (66%)		
	Sociology (72%)		
	Art (87%)		
	Music (56%)		
	Business Admin. (87%)		
	Accounting (56%)		

Source: NJ Commission on Higher Education data

The programs at the associate level are certainly reflective of the types of programs offered by community colleges, since they account for the vast majority of associate degree programs in New Jersey. As indicated, the program areas at the baccalaureate-level tend to be primarily in the liberal arts and sciences or social sciences. Interestingly, the programs at the doctoral level are all in engineering.

Program Enrollment

An issue related to program duplication is the extent to which certain programs are underenrolled. This is a concern because underenrolled programs reduce an institutions ability to realize economies of scale and consequently increase unit costs. For the purposes of this analysis, we have defined "underenrolled" programs as those at the undergraduate level with an enrollment of 25 or less and those at the graduate level with 10 or fewer enrollees. First professional programs were excluded from this analysis. Exhibit 5-14 shows the number of programs that met those criteria by level of instruction in Fall 1992 and Fall 1995.

EXHIBIT 5-14
NUMBER OF UNDERENROLLED DEGREE PROGRAM AREAS AND AVERAGE ENROLLMENT OF PROGRAMS BY LEVEL
FALL 1992 AND FALL 1995

Level	Fall 1992	Average Enrollment	Fall 1995	Average Enrollment
Associate*	141	10.0	234	8.9
Bachelors*	309	8.7	355	9.0
Graduate**	91	3.4	79	5.1
Total	**541**	**8.2**	**668**	**8.5**

Source: NJ Commission on Higher Education data.

* Those programs with 25 or fewer majors.

** Those programs with 10 or fewer major.

As indicated, 541 of the degree and certificate programs in Fall 1992 and 668 of the degree and certificate programs in Fall 1995 met these criteria. The increase between the two years is at the associate and bachelors level, while the number of "underenrolled" graduate programs decreased slightly during this period. The average enrollment of these programs increased at the bachelors and graduate level while declining at the associate level. This indicates that there were fewer bachelors and graduate programs, but more associate programs, at the lower end of their respective enrollment ranges in 1995.

While there are no national standards as to "underenrolled" programs, the fact that these numbers are equal to approximately one-fifth of the remaining degree and certificate programs offered by New Jersey institutions is an area of concern that requires further evaluation to determine whether there is justification for these programs. Not surprisingly, many of the underenrolled programs are also among those found in Exhibit 5-13, also reinforcing the need to further evaluate the need for these similar programs of study at many institutions.

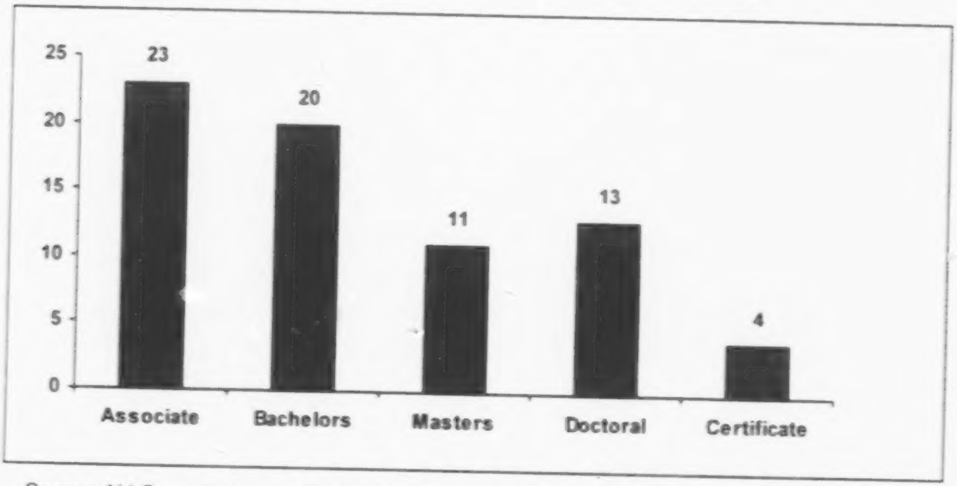
Instructional Collaboration Among New Jersey Institutions

In addition to their own on- and off-campus instructional programming, New Jersey colleges and universities also engage in various collaborative activities as well as described below:

- Joint/Cooperative Degree Programs: More than 70 degrees or certificates are offered through "joint" or "cooperative" activities between two or more New Jersey institutions of higher education. With joint programs, two co-sponsors jointly confer a single degree in a particular field; with "cooperative" programs, each institution grants a degree or certificate in the field. Most collaborative offerings are at the undergraduate level and in the health professions or health-related sciences and involve partnerships with UMDNJ and Rutgers. Rutgers also collaborates on scientific and technical degrees with NJIT. In addition, six community colleges in southern New Jersey participate in a Computer Integrated Manufacturing consortium housed at Camden County College leading to an associate degree. Exhibit 5-15 below shows the number of joint/cooperative programs in 1996-97 by level of instruction.

- **Articulation Agreements**: New Jersey community colleges have numerous articulation agreements with senior institutions where some or all of the community college credits are applied toward the baccalaureate. The degree of transferability varies widely depending on the institution and the program requirements.
- **Joint Branch Campus**: Burlington County College and NJIT jointly operate the Technology Education Center in Burlington County (Mt. Laurel.) Together, the two institutions offer various engineering and technology programs at the associate, baccalaureate, and graduate levels. They also collaborate with other institutions in southern New Jersey in planning and delivering engineering education programs.
- **Other Initiatives**: Other collaborative activities include the New Jersey Intercampus Network (NJIN), which includes 44 colleges and universities and various other representatives from the public and private sectors and promotes access to and use of information technologies; collaboration between community colleges and county vocational schools; and collaboration between higher institutions and elementary/secondary schools to offer college-level instruction and promote teacher/staff development.

EXHIBIT 5-15
JOINT/COLLABORATIVE DEGREE PROGRAMS BY LEVEL OF INSTRUCTION
1996-97



Source: NJ Commission on Higher Education survey on collaborative programming, 1997.

In short, there appears to be a wide array of collaborative activities currently taking place among the state's higher institutions, which certainly improves the efficiency of the overall system.

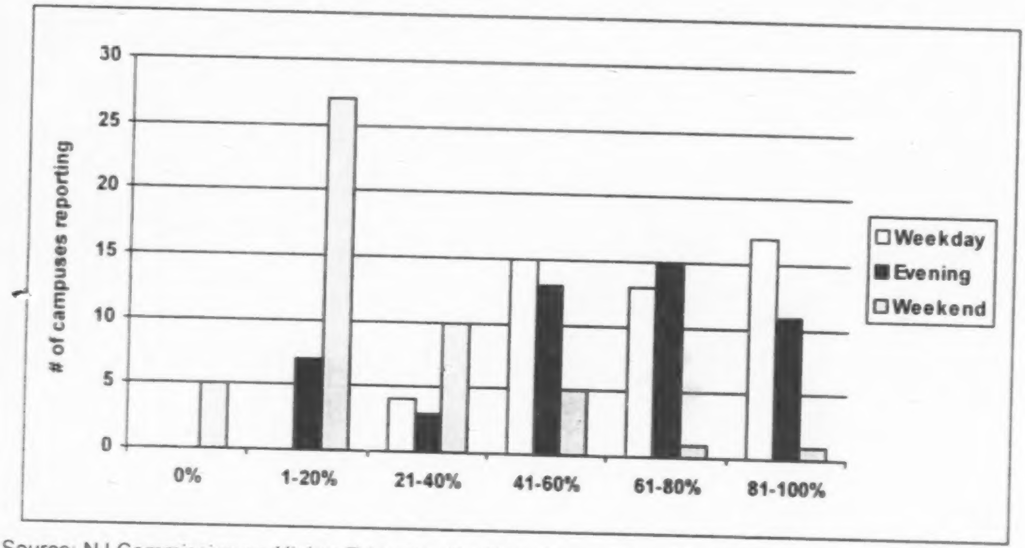
We are unable to comment on the overall effectiveness of these initiatives; however comments raised during the public hearings would suggest a certain level of dissatisfaction with the ability for community college students to transfer credits to senior-level institutions in order to complete their baccalaureate degree. We are aware that the President's Council is currently studying transfer and articulation issues and plans to make recommendations to improve these processes for community college students.

5.6 ***Current Physical Capacity of New Jersey's System of Higher Education***

The physical capacity of New Jersey's colleges and universities has a direct effect on the state's ability to accommodate the higher education needs of its residents. One key measure of capacity is the extent to which existing space is utilized. The Commission recently conducted a survey of colleges and universities in the state regarding a number of facilities issues including total space available for academic and auxiliary purposes, number of facilities, age of facilities, and reported utilization. Exhibits 5-16 and 5-17 show the distribution of reported classroom and instructional laboratory utilization during weekdays, evenings and weekends for the 49 campuses reporting utilization data on this survey.

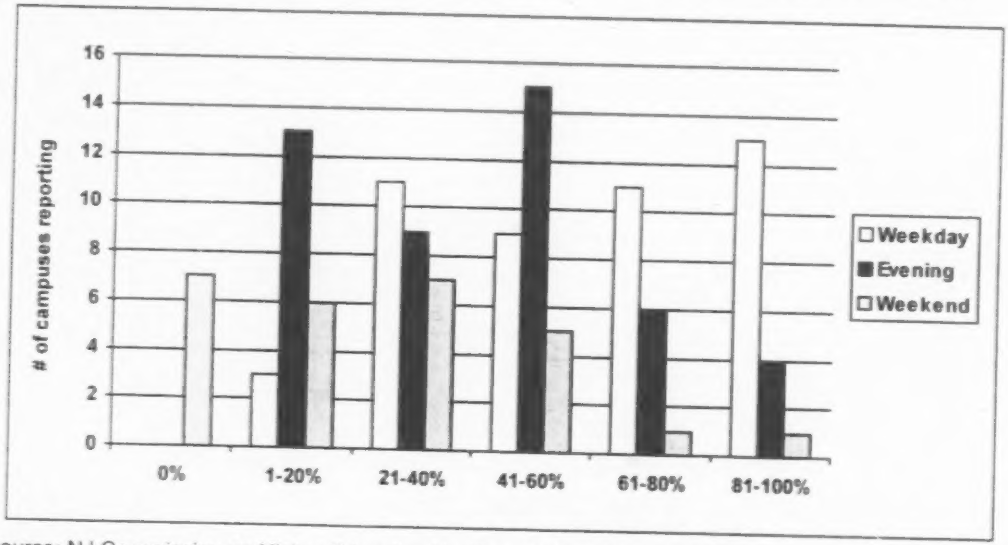
As indicated, weekday and evening utilization (the expected high traffic periods) of classroom facilities tends to be clustered in the 50 percent to 90 percent range, whereas weekend utilization tends to be much lower (40 percent or less.) This range compares with national utilization standards of 60 to 80 percent. For instructional laboratories, weekday and evening utilization tends to be more dispersed with the clusterings of institutions throughout the 20 percent to 90-plus percent range, although there is less utilization during the weekend hours as with classroom facilities. This range compares with national utilization standards of 70 to 80 percent. Together, these data suggest a general pattern of high utilization during weekday and evening hours, but somewhat lower utilization on the weekends. This optimal level of utilization suggests a need for an ongoing facilities maintenance program in order to maximize the useful life of higher education facilities in New Jersey.

EXHIBIT 5-16
REPORTED CLASSROOM UTILIZATION BY TIME OF DAY/WEEK



Source: NJ Commission on Higher Education Facilities Survey, August 1997. Based on responses from 49 campuses.

EXHIBIT 5-17
REPORTED INSTRUCTIONAL LAB UTILIZATION BY TIME OF DAY/WEEK



Source: NJ Commission on Higher Education Facilities Survey, August 1997. Based on responses from 49 campuses.

5.7 Summary of Supply/Access Analysis and Implications

From a statewide perspective, New Jersey institutions provide a wide array of educational options at all levels for state residents both on- and off-campus. However, the data indicate that there are some regions of the state which have lower levels of access to these options than others including the northwestern, southeastern, and coastal areas of the state. The state also has in place numerous efforts to extend access to higher education opportunities for special groups such as high school students, minority and disadvantaged individuals, and placebound individuals.

A majority of New Jersey institutions also extend access to higher education for state residents through distance learning technologies. One potential application of distance learning in the future will be to expand continuing education opportunities directly to the work place. The primary mechanisms used include video tape and interactive video classrooms. These are valuable mechanisms for complementing traditional modes of instructional delivery, but have both physical and fiscal limitations and will not fully replace traditional instructional delivery mechanisms.

Overall, New Jersey's system of higher education appears to be efficient as measured by low levels of program duplication and an extensive set of collaborative program initiatives. However, our analysis indicated that one-fifth of all degree programs in the state had low enrollments, which warrants additional exploration.

From a physical facilities perspective, instructional space utilization among New Jersey institutions appears to be consistent with national standards during the weekday and evening hours, although weekend utilization is somewhat lower. This optimal level of utilization suggests a need for an ongoing facilities maintenance program in order to maximize the useful life of higher education facilities in New Jersey.

6.0 RECOMMENDATIONS

This chapter presents recommendations for the consideration of the Task Force based on the data and findings presented in the previous chapters. Where possible, the fiscal impact of the recommendation(s) is also assessed. Per the original charge of the Task Force to the consultant in the Request for Proposal, these recommendations are organized according to the following six issues:

- Meeting unmet or underserved statewide/regional needs.
- Unnecessary program duplication and underutilized academic programs.
- Cooperative resource sharing and collaborations among Institutions in the delivery of academic programs and courses.
- The use of distance learning and other instructional technologies in the delivery of academic programs and courses.
- Educational options/opportunities for undergraduate students at various levels of achievement.
- Consolidation or closure of institutions.

Given the broad nature of these categories and the overarching nature of the underlying issues, our policy recommendations focus on the macro-level environment.

6.1 Meeting Unmet or Underserved Statewide/Regional Needs

FINDING

Our analysis indicated a number of positive aspects relative to the participation of New Jersey residents in higher education and of the overall degree of educational attainment of New Jersey residents:

- The overall level of participation in higher education anywhere (in state or out of state) by New Jersey high school graduates is well above the national average. More than three-fifths (64.4%) of high school graduates in the state enroll in a college or university somewhere within 12 months of graduation compared with 57 percent of high school graduates nationally.
- The overall level of educational attainment of New Jersey residents is also much higher than the national average. Almost three out of every ten residents age 25 or older (28.3%) have at least a bachelor's degree compared with 23.6 percent nationally.

Together, these indicate that there is good access to higher education for those high school graduates who wish to participate and a good supply of well-educated individuals to meet the needs of employers in the state.

However, our analysis of the data did reveal that there were potential pockets of low access to degree programs in some regions of the state for some individuals — specifically the northwest, southeast, and coastal areas of the state. This issue was also raised during the public hearings process. These also happen to be among the only regions in the state with a projected growth in college-age population through 2010.

Our analysis also indicated two related statewide issues that could impact the demand for higher education during the next several years. The first issue is the projected increase in high school graduates through the year 2005 which could also result in an increase in the number of new freshmen entering the higher education pipeline during the next several years. The second issue pertains to our finding that the overall number of degrees granted in computer science statewide on an annual basis is not sufficient to meet projected demand in related occupational fields.

One alternative for addressing these issues would be to establish new four-year institutions in the areas of the state which currently have low access as was suggested by one individual during the public hearings. This would also help accommodate the projected growth in New Jersey high school graduates. However, we do not believe that the establishment of new institutions is warranted at this time for the following reasons:

- Overall enrollment in New Jersey colleges and universities has declined by almost 15,000 students since Fall 1993, with no reduction in institutional capacity.
- The major expense of establishing new institutions could divert funds from existing institutions at a time when there are already concerns about resource availability.
- Even if funds were available, it would take five to seven years to bring a new institution on line. Thus, the state would still need to find ways to address short-term access needs. Further, the increased capacity might no longer be needed in the out-years, although the cost of maintaining the new institutions would remain.
- Finally, there is no guarantee that the additional New Jersey high school graduates projected in the next few years would decide to attend New Jersey institutions even if there were additional institutions to choose from in the future. Although high percentages of high school graduates from these regions (as well as other regions in the state) intend to go on to college, their actual in-state participation in higher education is below the state average.

RECOMMENDATION:

Address Statewide and Regional Needs Through Existing Institutions via a "Multi-Institution Center" Model. Establish an ongoing program of building maintenance.

Our analyses suggest that there are valid access issues for certain regions of the state and certain individuals living within those regions that require a response, albeit in a cost-efficient manner. We recommend that the Commission consider addressing these issues through existing institutions and instructional resources. Specifically, we recommend the establishment of "multi institution centers" in the northwest (e.g., Sussex and Warren counties), southeast (e.g., Atlantic and Cape May counties), and coastal (e.g., Monmouth and Ocean counties) areas of the state to offer associate, bachelors, and graduate level instruction to placebound residents (e.g., working adults). Such centers could involve partnerships between two- and four-year institutions (public, private, and proprietary) to offer collaborative and joint degree programs on site and through distance learning, providing "one-stop" shopping for students. In addition to meeting more general regional higher education needs, this model would also help meet more specific programmatic needs such as the computer science example mentioned earlier, as well as helping to address the continuing education needs of working adults, which was also mentioned as a "need" during the public hearing process.

We further recommend that the programs that are offered at these centers be selected and delivered via a market mechanism such as a bidding process among institutions to encourage competition and facilitate the most effective and efficient delivery of services to students. This is not unlike the mechanisms used to establish and provide "contract training" courses offered by community colleges to private industry or continuing education programs offered by universities to working professionals. This would require the use of existing staff to coordinate this competitive delivery of services to students.

These "centers" could be established at a host institution such as a community college, at a high school, or in other available commercial space. A specific recommendation as to the locations of these centers is beyond the scope of this study, although we recommend that they be located centrally within these regions, and near major transportation networks to optimize access.

This model would have a fiscal impact for participating institutions. In addition to the direct costs of hiring additional faculty to teach the necessary courses, students would require academic and student support functions such as advising, registration and records, adequate library facilities, and computing support. Also, an overarching cost would be incurred in coordinating the services provided at these centers, especially if there were an environment of market competition for delivering the services. The goal is to foster and encourage institutional cooperation, using the existing structure and student demand for determining programs.

The existing resources of participating institutions would help partially defray any additional cost of providing these services. Related to this is our finding that there is currently a pattern of reasonably optimal facilities utilization by New Jersey institutions, which suggests a need to have a systematic program of on-going facilities maintenance and renovation for colleges and universities in the state, especially if existing institutions are used to deliver services via the multi-institution center model. Additionally, there are two institutions located in these regions — Salem and Warren community colleges — that have low enrollment levels (see Section 5-5 of Chapter 5.0) which suggests potential unused capacity that could be used for this purpose at little or no additional cost to these institutions.

6.2 *Unnecessary Program Duplication and Underutilized Programs*

FINDING

One of the concerns underlying the establishment of the Task Force's study was the possibility of inefficient resource utilization caused by either overduplication of programs and/or underenrolled programs. Our analysis of the data did not indicate that there was unnecessary program duplication among the institutions in the state at this time, for which the institutions and the state should be commended.

However, our analysis of the data did find that there were a large number of underenrolled program areas at two different points in time. Further, there had been an increase in such programs during this period, which indicates that this issue remains a potential area for further investigation.

RECOMMENDATION:

The Commission should request each institution's governing board to justify low enrollment programs (those with 25 or less students at the associate and baccalaureate levels and 10 or less at the graduate level) or they should be phased out or offered in collaboration with other institutions.

While our review of the data provided an initial assessment of underenrolled programs, an in-depth analysis of the reasons and rationales for such programs is beyond the scope of this study. There may be justifiable reasons for the existence of some low enrollment programs. For example, certain programs may not have a significant number of majors, but may provide a significant service role through their course offerings to other programs and departments on campus. However, those programs that are not justified should be addressed through a positive action such as phase out or consolidation with similar programs at other institutions.

6.3 Cooperative Resource Sharing/Collaboration

FINDINGS

Another efficiency-related issue underlying this study is the degree to which institutions in New Jersey are sharing instructional resources through collaborative programming. We found that there was a high level of cooperation and collaboration already taking place among New Jersey institutions as measured by the number of collaborative degree programs in place and other related activities, which deserves commendation.

An issue that was also raised during the public hearings process — and that is currently being studied by the Presidents' Council — was the difficulty faced by some community college students in transferring credits to senior institutions in order to complete their baccalaureate degree. This also impacts the efficiency of the system because community college students who have difficulty transferring credits have to retake those courses at the senior institution which adds time and expense to the student's education and duplicates instructional costs already borne at the community college.

RECOMMENDATION:

The Presidents' Council should develop and recommend to the Commission a coordinated statewide transfer articulation policy for community college students.

We recommend that the Presidents' Council, consider at least the following three initiatives in addressing this issue:

- The establishment of a uniform statewide articulation agreement between public senior institutions and community colleges;
- The establishment of a standing statewide committee composed of representatives from all institutional sectors that could monitor transfer and articulation issues on an ongoing basis; and
- The establishment and maintenance of a transfer information "clearinghouse" that community college students could refer to for relevant information on the transferability of specific courses and credits on a statewide basis.

All of three of these policies have been implemented in various other states (e.g., Florida, Wisconsin), and the Task Force, in collaboration with the Presidents' Council, should explore the applicability of such policies to the New Jersey situation. We should also point out that our earlier recommendation regarding the establishment of multi-institution centers may also help alleviate the transfer and articulation problems for community college students at participating institutions.

6.4 Distance Learning and Instructional Technology Usage

FINDINGS

One of the charges to the Task Force and the consultant was to evaluate the use of technology by New Jersey institutions to provide effective and efficient higher education. Our evaluation of the current status of distance learning and instructional technology usage by New Jersey institutions indicated a large and growing utilization of these modes of instructional delivery, primary via video tape and interactive video classrooms.

We also commend the work of the Higher Education Technology Task Force, whose recent recommendations provide a useful starting policy framework for distance learning and instructional technology initiatives within the state. We concur with the Higher Education Technology Task Force that faculty and staff training and development in technology be made a high priority in institutional technology efforts.

RECOMMENDATIONS:

The Commission should strive to develop an operational environment for distance learning that maintains quality while reducing barriers to the access and dissemination of programs.

As discussed in Chapter 5.0, the Higher Education Technology Task Force had recommended a series of regulatory mechanisms regarding distance learning programs. We urge the Commission to create a regulatory environment that maximizes quality assurance for consumers but does not put cumbersome mechanisms in place for New Jersey institutions regarding the offering of distance learning-based courses and programs. Because this is such a rapidly growing national and international marketplace, New Jersey colleges and universities could be placed at a competitive disadvantage relative to out-of-state providers if they do not have the flexibility to respond to consumer (i.e., state residents and employers) demand in a timely and efficient manner.

The Presidents' Council should develop and propose incentives regarding the efficient and effective use of distance learning and instructional technologies.

The use of distance learning and instructional technology is clearly an emerging pedagogical area that will require close monitoring and incentives to allow it to flourish. One such incentive area is the availability of training for faculty and staff, which was also mentioned as a priority area by the Higher Education Technology Task Force. The effective use of technology can only occur if those utilizing it have the proper training. Other incentive areas include the availability of technical support for faculty, staff, and students.

6.5 *Educational Opportunities for All New Jersey Undergraduates*

FINDINGS

The Task Force and consultant were charged with assessing the current level of educational options and opportunities for undergraduate students at all levels of achievement. One specific concern that was raised during the public hearings was that there needed to be more options for high-achieving New Jersey students. Overall, we feel that the high level of participation in higher education by New Jersey high school graduates anywhere (in state and out of state) is strong evidence that their educational needs are already being met; thus there is no demand-related need to provide more options for high-achieving students. Further, the breadth of program offerings currently in place throughout New Jersey institutions provide excellent educational opportunities for all resident undergraduates.

While the state's needs for undergraduate education are being met satisfactorily, the Task Force believes that the enrollment of high-achieving high school graduates, both from New Jersey and other states, can favorably impact the quality of New Jersey colleges and universities. Because institutional quality was raised as a significant issue during the December hearings, the Task Force makes the following recommendations.

RECOMMENDATION:

The Task Force believes that the recruitment and retention of high-achieving students, from both New Jersey and other states, can favorably impact the quality of New Jersey colleges and universities and supports the current, generous level of funding for merit scholarships. However, the findings of the study do not indicate that outmigration negatively affects the state's level of educational attainment or its ability to hire qualified employees, and it is not clear that additional dollars alone will significantly increase the enrollment of these students. Nevertheless, because the quality of the system was not an area examined by the Task Force, the Commission working with the Presidents' Council, may wish to examine the many facets of quality necessary to achieve the vision for higher education articulated in *New Jersey's Plan for Higher Education*, which states that "New Jersey's system of higher education aspires to be among the best in the world." The enrollment of high-achieving students is one measure of that quality.

There are, however, two subgroups of undergraduates that warrant special attention: minority, economically, and academically disadvantaged students, and students who use English as a second language. Based on our analysis of available data, both the Educational Opportunity Fund and Tuition Aid Grant programs appear to extend access to higher education opportunities for significant numbers of minority and economically disadvantaged individuals from throughout New Jersey. We would suggest that the increasing proportion of institutional enrollment accounted for by minority students as well as the projected increase in the non-white population indicate that support for EOF, TAG and related programs needs to be enhanced in the future.

Also, the large numbers of individuals in New Jersey who do not have proficiency in the English language, or use it as a second language, require special attention in order to succeed. This issue was mentioned in particular as an area of concern at one of the public hearings, given that New Jersey ranks seventh in the nation in the proportion of school-age children who come from non-English speaking homes. One-fifth or more of the households in 11 of New Jersey's 21 counties do not use English as the primary language at home which also indicates a need enhance the investment in programs that serve ESL students.

RECOMMENDATION:

The Commission should work with the state to ensure that support for programs for minority, economically and academically disadvantaged, and English as a second language students (including EOF, TAG and programs for ESL students) are enhanced in the future.

6.6 *Institutional Consolidation or Closure*

FINDINGS

The final area of recommendation pertains to the issue of institutional consolidation or closure. Arguments for consolidation or closure of institutions could be made if there was significant overlap and duplication among instructional offerings provided throughout the state, or if there were a surplus of low enrollment institutions suggesting an opportunity to achieve economies of scale through institutional consolidation.

We do not believe that there is any justification for institutional consolidation or closure in New Jersey. Our analysis of the data indicated that there was a low level of program duplication among institutions in the state. Our analysis also indicated that, with two exceptions, public colleges and universities were operating at enrollment levels where research suggests that economies of scale have been realized. Further, as discussed in Section 6.1, the two institutions that were below this level — Salem and Warren County community colleges — could be used to provide additional instructional capacity via the "multi-institution model" delivery system, if adopted, at little or no additional cost.[1]

6.7 *Summary of Recommendations*

Following is a summary of our main recommendations:

- The state should address both regional and specific higher education needs through collaborations among existing institutions via a "multi-institution center model" which would deliver the necessary programs and services through institutional collaboration to individuals using both on site and distance learning-based instruction.
- The Task Force believes that the recruitment and retention of high-achieving students, from both New Jersey and other states, can favorably impact the quality of New Jersey colleges and universities and supports the current, generous level of funding for merit scholarships. However, the findings of the study do not indicate that outmigration negatively affects the state's level of educational attainment or its ability to hire qualified employees, and it is not clear that additional dollars alone will significantly increase the enrollment of these students. Nevertheless, because the quality of the system

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[1] See Section 5-5 of Chapter 5.0 for a more detailed discussion.

was not an area examined by the Task Force, the Commission working with the Presidents' Council, may wish to examine the many facets of quality necessary to achieve the vision for higher education articulated in *New Jersey's Plan for Higher Education*, which states that "New Jersey's system of higher education aspires to be among the best in the world." The enrollment of high-achieving students is one measure of that quality.

- The Commission should work with the state to ensure that support for programs for minorities, academically, and economically disadvantaged students (including EOF, TAG, and programs for ESL students) are enhanced in the future.
- The Commission should request each institution's governing board to justify low enrollment programs (those with 25 or less students at the associate and baccalaureate levels and 10 or less at the graduate level) or they should be phased out or offered in collaboration with other institutions.
- The Commission should work with the state to establish an ongoing program of building maintenance and renewal for the state's colleges and universities. Funding for building maintenance and renewal should take precedence over funding for new construction.
- The Commission should strive to develop an operational environment for distance learning that maintains quality while reducing barriers to access and dissemination to programs.
- The Presidents' Council should develop a coordinated statewide transfer and articulation policy for community college students.
- The Presidents' Council should develop and propose incentives regarding the efficient and effective use of distance learning and instructional technologies (e.g., faculty and staff training.)

APPENDIX A - SELECTED DEMOGRAPHIC DATA BY COUNTY: 1990, 1994, 2000, 2005 AND 2010

APPENDIX A-1

PROPORTION OF NEW JERSEY POPULATION WITHIN SELECTED AGE BRACKETS BY COUNTY

ACTUAL 1990 - PROJECTED 2010

	Age 15-24					Age 25-34					Age 35-44				
	1990	Est. 1994	Proj. 2000	Proj. 2005	Proj. 2010	1990	Est. 1994	Proj. 2000	Proj. 2005	Proj. 2010	1990	Est. 1994	Proj. 2000	Proj. 2005	Proj. 2010
New Jersey	**14.0%**	**12.5%**	**12.3%**	**13.1%**	**13.8%**	**17.6%**	**16.0%**	**12.9%**	**12.0%**	**12.4%**	**15.4%**	**16.5%**	**17.1%**	**15.3%**	**13.0%**
Atlantic	14.2%	12.7%	12.4%	13.2%	13.9%	18.5%	16.8%	14.1%	13.4%	13.8%	14.5%	15.5%	16.7%	15.2%	13.1%
Bergen	12.6%	11.2%	11.1%	11.8%	12.1%	16.5%	14.9%	11.8%	10.9%	11.3%	15.6%	16.7%	17.1%	14.9%	12.5%
Burlington	14.8%	13.2%	13.0%	13.6%	14.1%	18.1%	16.3%	13.4%	13.1%	13.7%	15.7%	16.8%	17.1%	15.2%	13.2%
Camden	13.9%	12.4%	12.6%	13.9%	15.2%	17.8%	16.1%	12.8%	11.8%	12.3%	15.0%	16.0%	16.7%	15.0%	12.6%
Cape May	11.9%	10.6%	10.5%	11.6%	12.1%	15.5%	13.8%	11.2%	10.5%	10.9%	13.4%	14.3%	15.0%	13.3%	11.1%
Cumberland	14.6%	13.0%	13.0%	14.1%	15.5%	16.5%	15.1%	12.9%	12.5%	12.9%	14.4%	15.4%	15.8%	14.3%	12.6%
Essex	15.2%	13.5%	13.3%	13.9%	14.6%	17.6%	16.3%	13.3%	12.4%	12.6%	14.9%	16.0%	16.5%	15.0%	12.8%
Gloucester	14.4%	12.8%	12.3%	13.3%	14.0%	17.7%	15.9%	12.7%	11.6%	11.8%	15.9%	17.0%	17.7%	15.8%	13.4%
Hudson	15.1%	13.5%	13.2%	13.9%	14.5%	20.4%	18.8%	15.3%	14.0%	14.5%	14.3%	15.4%	16.1%	14.8%	12.5%
Hunterdon	12.5%	11.0%	10.4%	11.2%	12.1%	17.1%	15.3%	12.5%	11.5%	12.1%	19.1%	20.2%	20.6%	18.3%	15.9%
Mercer	15.6%	13.9%	13.8%	14.7%	15.3%	17.3%	15.8%	12.6%	11.5%	11.8%	15.6%	16.7%	17.2%	15.3%	12.8%
Middlesex	15.7%	14.1%	13.8%	14.7%	15.3%	19.6%	17.8%	14.2%	13.0%	13.5%	15.4%	16.6%	17.2%	15.2%	12.8%
Monmouth	13.1%	11.7%	11.5%	12.4%	13.0%	16.5%	14.9%	12.1%	11.3%	11.6%	16.7%	17.7%	18.4%	16.4%	14.2%
Morris	13.8%	12.3%	12.2%	13.0%	13.4%	17.0%	15.2%	12.2%	11.3%	11.7%	17.1%	18.2%	18.5%	16.4%	14.0%
Ocean	11.6%	10.2%	10.4%	11.4%	12.0%	14.5%	12.9%	10.7%	10.0%	10.5%	13.6%	14.4%	15.4%	13.8%	11.8%
Passaic	15.3%	13.6%	13.5%	14.6%	15.5%	17.7%	16.3%	13.5%	12.3%	12.6%	14.6%	15.7%	16.5%	15.2%	12.9%
Salem	13.3%	11.8%	12.6%	13.4%	14.0%	15.3%	13.7%	11.0%	10.9%	11.9%	15.1%	16.0%	16.3%	14.2%	11.9%
Somerset	12.2%	10.9%	10.7%	11.5%	12.0%	20.0%	18.0%	14.7%	14.2%	14.2%	17.0%	18.1%	19.0%	16.6%	14.4%
Sussex	12.7%	11.2%	10.9%	12.0%	12.9%	18.0%	16.1%	13.4%	13.2%	14.0%	18.6%	19.6%	20.6%	18.5%	16.4%
Union	13.3%	11.9%	11.7%	12.5%	13.2%	17.2%	15.9%	12.8%	11.6%	11.7%	14.8%	15.9%	16.5%	15.0%	12.6%
Warren	12.8%	11.3%	11.0%	12.3%	13.3%	17.4%	15.6%	12.4%	11.6%	12.0%	16.0%	17.0%	17.8%	15.7%	13.1%

Source: New Jersey Department of Labor, Labor Market and Demographic Research, November 1996.

APPENDIX A-2
PROPORTION OF NEW JERSEY POPULATION BY RACE AND COUNTY
ACTUAL 1990 - PROJECTED 2010

	White					Black					"Other" Races				
	1990	Est. 1994	Proj. 2000	Proj. 2005	Proj. 2010	1990	Est. 1994	Proj. 2000	Proj. 2005	Proj. 2010	1990	Est. 1994	Proj. 2000	Proj. 2005	Proj. 2010
New Jersey	**82.4%**	**80.9%**	**79.6%**	**78.0%**	**76.3%**	**13.8%**	**14.4%**	**14.8%**	**15.3%**	**15.8%**	**3.8%**	**4.7%**	**5.6%**	**6.7%**	**7.8%**
Atlantic	79.6%	77.7%	75.5%	73.2%	70.8%	17.9%	19.2%	20.3%	21.3%	22.2%	2.5%	3.1%	4.1%	5.5%	7.0%
Bergen	88.3%	86.1%	84.3%	82.4%	80.1%	4.9%	5.3%	5.6%	6.0%	6.3%	6.8%	8.6%	10.1%	11.7%	13.5%
Burlington	83.2%	81.5%	79.4%	76.7%	73.7%	14.5%	15.5%	17.0%	18.9%	20.9%	2.3%	3.0%	3.6%	4.4%	5.4%
Camden	80.5%	78.4%	76.5%	74.5%	72.4%	16.9%	18.2%	19.4%	20.4%	21.5%	2.6%	3.3%	4.1%	5.1%	6.1%
Cape May	93.4%	92.7%	91.8%	90.9%	89.9%	5.7%	6.2%	6.7%	7.2%	7.7%	0.9%	1.1%	1.5%	1.9%	2.4%
Cumberland	80.4%	78.9%	77.5%	76.0%	74.5%	17.7%	18.8%	19.7%	20.5%	21.2%	1.9%	2.3%	2.8%	3.5%	4.4%
Essex	55.6%	53.8%	51.9%	49.9%	47.8%	41.4%	42.6%	43.8%	44.9%	45.8%	3.0%	3.6%	4.3%	5.3%	6.4%
Gloucester	89.8%	88.6%	87.5%	86.4%	85.1%	8.7%	9.5%	10.3%	10.9%	11.7%	1.5%	1.9%	2.2%	2.7%	3.2%
Hudson	77.6%	75.9%	74.4%	72.7%	71.0%	15.3%	15.7%	15.8%	15.8%	15.8%	7.1%	8.4%	9.8%	11.6%	13.3%
Hunterdon	96.5%	96.1%	95.7%	95.1%	94.5%	2.1%	2.1%	2.1%	2.3%	2.4%	1.4%	1.8%	2.2%	2.6%	3.1%
Mercer	77.5%	75.4%	73.4%	71.2%	68.9%	19.2%	20.4%	21.5%	22.6%	23.7%	3.3%	4.1%	5.1%	6.2%	7.5%
Middlesex	84.8%	82.4%	80.2%	77.7%	75.1%	8.3%	8.9%	9.5%	10.1%	10.7%	6.9%	8.7%	10.3%	12.1%	14.2%
Monmouth	88.4%	87.0%	85.6%	84.0%	82.2%	8.7%	9.3%	10.0%	10.7%	11.4%	2.9%	3.7%	4.4%	5.3%	6.4%
Morris	92.9%	91.5%	90.3%	89.0%	87.4%	3.0%	3.2%	3.5%	3.8%	4.1%	4.1%	5.2%	6.2%	7.3%	8.5%
Ocean	96.1%	95.6%	94.9%	94.2%	93.5%	2.8%	3.1%	3.4%	3.7%	4.0%	1.1%	1.3%	1.7%	2.1%	2.5%
Passaic	80.9%	79.1%	77.6%	75.9%	74.3%	16.1%	17.2%	18.0%	18.9%	19.7%	3.0%	3.7%	4.4%	5.2%	6.0%
Salem	84.3%	82.9%	81.5%	80.2%	78.8%	14.8%	16.0%	16.9%	17.9%	19.0%	0.9%	1.1%	1.5%	1.9%	2.4%
Somerset	89.2%	87.5%	86.1%	84.9%	84.0%	6.3%	6.8%	7.1%	7.3%	7.4%	4.5%	5.7%	6.7%	7.8%	8.6%
Sussex	98.0%	97.6%	97.3%	96.9%	96.4%	1.0%	1.0%	1.0%	1.1%	1.2%	1.1%	1.4%	1.6%	2.0%	2.4%
Union	77.9%	76.3%	74.6%	72.8%	71.0%	19.1%	20.0%	20.9%	21.8%	22.6%	3.0%	3.7%	4.5%	5.4%	6.3%
Warren	97.6%	97.2%	96.9%	96.5%	95.8%	1.4%	1.6%	1.7%	2.0%	2.3%	0.9%	1.2%	1.4%	1.7%	1.9%

Source: New Jersey Department of Labor, Labor Market and Demographic Research, November 1996. May not total to 100.0 due to rounding.

APPENDIX B

DEFINITIONS OF EDUCATION AND TRAINING REQUIREMENTS

The following definitions were developed by the U.S. Department of Labor. The classification, in which an occupation is included, reflects the manner in which most workers become proficient in that occupation.

First professional degree. Occupations that require a professional degree. Completion of the academic program usually requires at least 6 years of full-time equivalent academic study, including college study prior to entering the professional degree program.

Doctoral degree. Occupations that generally require a Ph.D. or other doctoral degree. Completion of degree program usually requires at least 3 years of full-time equivalent academic work beyond the bachelor's degree.

Master's degree. Occupations that generally require a master's degree. Completion of the degree program usually requires 1 or 2 years of full-time equivalent study beyond the bachelor's degree.

Work experience, plus a bachelor's degree or higher degree. Occupations that generally require work experience in an occupation requiring a bachelor's or higher degree. Most occupations in this category are managerial occupations that require experience in a related non-managerial position.

Bachelor's degree. Occupations that generally require a bachelor's degree. Completion of the degree program generally requires at least 4 years but not more than 5 years of full-time equivalent academic work.

Associate degree. Occupations that generally require an associate degree. Completion of the degree program usually requires at least 2 years of full-time equivalent academic work.

Moderate-term on-the-job training. Occupations in which workers can develop the skills needed for average job performance after 1 to 12 months of combined on-the-job experience and informal training.

Short-term on-the-job training. Occupations in which workers generally develop the skills needed for average job performance after a short demonstration or up to one month of on-the-job experience and instruction.

Sources: New Jersey Department of Labor , March 1997 INDUSTRY AND OCCUPATIONAL EMPLOYMENT PROJECTIONS FOR NEW JERSEY: 1994 TO 2005, VOLUME I PART A.

APPENDIX C
SAT AND HIGH SCHOOL RANK DISTRIBUTIONS OF FIRST-TIME, FULL-TIME FRESHMEN

SAT Test Score Distribution By Sector

SAT test score distributions have been provided for all 1996 first-time full-time freshmen at New Jersey institutions who are New Jersey residents and are included in Appendix C-1 (source: NJ Commission on Higher Education). Also included are the SAT distributions for all 1996 New Jersey high school graduates regardless of where or whether they enrolled in college (source: College Board). "Non-enrollees in NJ institutions" have been calculated by subtracting the "All NJ resident first-time, full-time freshmen" line from the "All 1996 New Jersey HS Graduates" line.

High School Rank Distribution By Sector

High school rank distributions (by quintile) have been provided for all 1996 first-time, full-time freshmen at New Jersey institutions who are New Jersey residents, and are included in Appendix C-2 (source: NJ Commission on Higher Education). Also included is an estimate of all New Jersey high school graduates based on data from the state Department of Education. The estimated total number of high school graduates has been arrayed according to the expected distribution by quintile.

APPENDIX C-1

SAT Verbal	200-290	300-390	400-490	500-590	600-690	700-800	Total
Public Research Universities	13	234	1,221	2,433	1,493	286	5,680
% of total	*0.2%*	*4.1%*	*21.5%*	*42.8%*	*26.3%*	*5.0%*	*100.0%*
State Colleges and Universities	98	560	1,884	2,064	1,049	126	5,781
% of total	*1.7%*	*9.7%*	*32.6%*	*35.7%*	*18.1%*	*2.2%*	*100.0%*
Private Institutions	53	427	1,594	1,419	574	184	4,251
% of total	*1.2%*	*10.0%*	*37.5%*	*33.4%*	*13.5%*	*4.3%*	*100.0%*
All NJ Resident FT-FT Fresh.	**164**	**1,221**	**4,699**	**5,916**	**3,116**	**596**	**15,712**
% of total	***1.0%***	***7.8%***	***29.9%***	***37.7%***	***19.8%***	***3.8%***	***100.0%***
All 1996 New Jersey HS Graduates	2,280	8,453	19,053	18,577	9,238	2,456	60,057
% of total	*3.8%*	*14.1%*	*31.7%*	*30.9%*	*15.4%*	*4.1%*	*100.0%*
Non-Enrollees in NJ Institutions	**2,116**	**7,232**	**14,354**	**12,661**	**6,122**	**1,860**	**44,345**
% of total	***4.8%***	***16.3%***	***32.4%***	***28.6%***	***13.8%***	***4.2%***	***100.0%***
% of total HS Graduates	***92.8%***	***85.6%***	***75.3%***	***68.2%***	***66.3%***	***75.7%***	***73.8%***

SAT Math	200-290	300-390	400-490	500-590	600-690	700-800	Total
Public Research Universities	2	138	966	2,189	1,818	567	5,680
% of total	*0.0%*	*2.4%*	*17.0%*	*38.5%*	*32.0%*	*10.0%*	*100.0%*
State Colleges and Universities	50	506	2,004	2,474	1,131	154	6,319
% of total	*0.8%*	*8.0%*	*31.7%*	*39.2%*	*17.9%*	*2.4%*	*100.0%*
Private Institutions	35	466	1,577	1,383	573	231	4,265
% of total	*0.8%*	*10.9%*	*37.0%*	*32.4%*	*13.4%*	*5.4%*	*100.0%*
Subtotal - NJ Residents	**87**	**1,110**	**4,547**	**6,046**	**3,522**	**952**	**16,264**
% of total	***0.5%***	***6.8%***	***28.0%***	***37.2%***	***21.7%***	***5.9%***	***100.0%***
All 1996 New Jersey HS Graduates	1,569	8,608	19,162	17,233	9,904	3,581	60,057
% of total	*2.6%*	*14.3%*	*31.9%*	*28.7%*	*16.5%*	*6.0%*	*100.0%*
Non-Enrollees in NJ Institutions	**1,482**	**7,498**	**14,615**	**11,187**	**6,382**	**2,629**	**43,793**
% of total	***3.4%***	***17.1%***	***33.4%***	***25.5%***	***14.6%***	***6.0%***	***100.0%***
% of total HS Graduates	***94.5%***	***87.1%***	***76.3%***	***64.9%***	***64.4%***	***73.4%***	***72.9%***

APPENDIX C-2

	Bottom Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Top Quintile	Total
Public Research Universities	17	104	564	1,719	2,769	5,173
% of total	*0.3%*	*2.0%*	*10.9%*	*33.2%*	*53.5%*	*100.0%*
State Colleges and Universities	93	477	1,287	1,932	2,352	6,141
% of total	*1.5%*	*7.8%*	*21.0%*	*31.5%*	*38.3%*	*100.0%*
Private Institutions	215	597	838	907	1,080	3,637
% of total	*5.9%*	*16.4%*	*23.0%*	*24.9%*	*29.7%*	*100.0%*
All NJ Resident FT-FT Fresh.	**325**	**1,178**	**2,689**	**4,558**	**6,201**	**14,951**
% of total	***2.2%***	***7.9%***	***18.0%***	***30.5%***	***41.5%***	***100.0%***
Est. New Jersey HS Graduates	15,820	15,820	15,820	15,820	15,820	79,100
% of total	*20.0%*	*20.0%*	*20.0%*	*20.0%*	*20.0%*	*100.0%*
Non-Enrollees in NJ Institutions	**15,495**	**14,642**	**13,131**	**11,262**	**9,619**	**64,149**
% of total	***24.2%***	***22.8%***	***20.5%***	***17.6%***	***15.0%***	***100.0%***
% of total est. HS graduates	***97.9%***	***92.6%***	***83.0%***	***71.2%***	***60.8%***	***81.1%***

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APPENDIX D
ENROLLMENT TREND DATA

APPENDIX D-1
FALL UNDERGRADUATE ENROLLMENT BY SECTOR AND STUDENT LEVEL

	1990		1991		1992		1993	
Sector	**Lower**	**Upper**	**Lower**	**Upper**	**Lower**	**Upper**	**Lower**	**Upper**
Four-Year Public	53,786	54,081	51,652	56,300	50,605	58,581	48,974	58,918
Four-Year Private	23,753	17,269	23,151	17,324	23,402	17,414	23,527	17,611
TOTAL	77,539	71,350	74,803	73,624	74,007	75,995	72,501	76,529

	1994		1995		1996	
Sector	**Lower**	**Upper**	**Lower**	**Upper**	**Lower**	**Upper**
Four-Year Public	48,166	57,917	48,493	58,547	49,949	57,146
Four-Year Private	23,382	16,808	22,363	17,264	22,307	17,784
TOTAL	71,548	74,725	70,856	75,811	72,256	74,930

APPENDIX D-2
FALL ENROLLMENT IN GRADUATE PROGRAMS BY SECTOR

Sector	1990	1991	1992	1993	1994	1995	1996
Four-Year Public	26,346	26,654	27,079	27,083	27,035	27,196	26,783
Four-Year Private	15,269	16,385	16,468	16,272	15,837	15,472	15,388
TOTAL	41,615	43,039	43,547	43,355	42,872	42,668	42,171

APPENDIX D-3
ENROLLMENT IN FIRST PROFESSIONAL PROGRAMS BY SECTOR

Sector	1990	1991	1992	1993	1994	1995	1996
Four-Year Public	3,478	3,523	3,407	3,416	3,536	3,593	3,615
Four-Year Private	2,685	2,798	2,987	3,096	3,052	3,018	2,971
TOTAL	6,163	6,321	6,394	6,512	6,588	6,611	6,586

APPENDIX D-4
TOTAL FALL UNDERGRADUATE ENROLLMENT BY PART-TIME/FULL-TIME STATUS BY SECTOR

Sector	1990		1991		1992		1993	
	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time
Four-Year Public	37,046	70,821	35,902	72,050	36,518	72,668	36,051	71,841
Community Colleges	78,340	45,570	83,122	49,477	86,141	52,572	85,054	54,916
Four-Year Private	12,712	28,310	12,528	27,947	13,171	27,645	13,196	27,942
Two-Year Private, Non-Profit	24	11	26	40	22	10	19	9
Propriety	1,127	2,547	1,215	2,739	1,270	2,810	1,171	2,836
TOTAL	129,249	147,259	132,793	152,253	137,122	155,705	135,491	157,544

Sector	1994		1995		1996	
	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time
Four-Year Public	35,130	70,953	34,503	72,537	32,985	73,439
Community Colleges	81,087	54,679	78,378	52,369	73,050	54,053
Four-Year Private	12,437	27,753	11,894	27,733	10,486	28,782
Two-Year Private, Non-Profit	22	6	15	17	17	7
Propriety	1,094	2,750	1,027	2,494	1,678	3,381
TOTAL	129,770	156,141	125,817	155,150	118,216	159,662

APPENDIX D-5
FALL UNDERGRADUATE ENROLLMENT BY STUDENT LEVEL
FOUR YEAR-PUBLIC INSTITUTIONS

	Lower			Upper		
Year	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
1990	16,215	37,571	53,786	20,831	33,250	54,081
1991	14,567	37,085	51,652	21,335	34,965	56,300
1992	14,050	36,555	50,605	22,468	36,113	58,581
1993	13,083	35,891	48,974	22,968	35,950	58,918
1994	12,500	35,666	48,166	22,630	35,287	57,917
1995	12,012	36,481	48,493	22,491	36,056	58,547
1996	11,206	37,552	48,758	21,779	35,887	57,666

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APPENDIX D-6
FALL ENROLLMENT IN GRADUATE PROGRAMS
FOUR-YEAR PUBLIC INSTITUTIONS

Year	Part-Time	Full-Time	Sub-Total
1990	20,315	6,031	26,346
1991	20,402	6,252	26,654
1992	20,607	6,472	27,079
1993	20,774	6,309	27,083
1994	20,867	6,168	27,035
1995	21,121	6,075	27,196
1996	19,575	6,996	26,571

APPENDIX D-7
FALL ENROLLMENT IN FIRST PROFESSIONAL PROGRAMS
FOUR-YEAR PUBLIC INSTITUTIONS

Year	Part-Time	Full-Time	Sub-Total
1990	444	3,034	3,478
1991	429	3,094	3,523
1992	419	2,988	3,407
1993	416	3,000	3,416
1994	444	3,092	3,536
1995	443	3,150	3,593
1996	969	3,529	4,498

APPENDIX D-8
FALL UNDERGRADUATE ENROLLMENT BY STUDENT LEVEL
FOUR-YEAR PRIVATE INSTITUTIONS

Year	Lower			Upper		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
1990	7,812	15,941	23,753	4,900	12,369	17,269
1991	7,692	15,459	23,151	4,836	12,488	17,324
1992	7,881	15,521	23,402	5,290	12,124	17,414
1993	7,912	15,615	23,527	5,284	12,327	17,611
1994	7,385	15,997	23,382	5,052	11,756	16,808
1995	6,793	15,570	22,363	5,101	12,163	17,264
1996	5,366	15,561	20,927	5,120	13,221	18,341

APPENDIX D-9
FALL ENROLLMENT IN GRADUATE PROGRAMS
FOUR-YEAR PRIVATE INSTITUTIONS

Year	Upper		
	Part-Time	Full-Time	Sub-Total
1990	11,102	4,167	15,269
1991	11,636	4,749	16,385
1992	11,636	4,832	16,468
1993	11,482	4,790	16,272
1994	11,113	4,724	15,837
1995	10,521	4,951	15,472

APPENDIX D-10
ENROLLMENT IN FIRST PROFESSIONAL PROGRAMS
FOUR-YEAR PRIVATE INSTITUTIONS

Year	Part-Time	Full-Time	Sub-Total
1990	595	2,090	2,685
1991	619	2,179	2,798
1992	703	2,284	2,987
1993	626	2,470	3,096
1994	650	2,402	3,052
1995	639	2,379	3,018
1996	961	2,665	3,626

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APPENDIX D-11
ENROLLMENT BY DIVISION ACROSS RACE-ETHNICITIES
FOUR-YEAR PUBLIC INSTITUTIONS

	1990						1991						1992					
	Lower			Upper			Lower			Upper			Lower			Upper		
Races	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Tota	Part-Tim	Full-Time	Sub-Tota	Part-Tim	Full-Time	Sub-Tota	Part-Tim	Full-Time	Sub-Tota	Part-Time	Full-Time	Sub-Total
Non-Resident	148	1,010	1,158	402	788	1,190	148	1,019	1,167	415	863	1,278	141	921	1,062	417	940	1,357
African American	2,035	4,867	6,902	1,822	2,935	4,757	1,699	4,830	6,529	1,839	3,187	5,026	1,763	4,730	6,493	1,972	3,396	5,368
Native American	46	83	129	68	64	132	52	66	118	61	66	127	44	78	122	63	78	141
Asian American	727	2,706	3,433	537	1,989	2,526	660	2,904	3,564	590	2,360	2,950	693	3,009	3,702	697	2,709	3,406
Hispanic	1,294	3,651	4,945	998	2,049	3,047	1,239	3,957	5,196	1,071	2,353	3,424	1,267	4,310	5,577	1,169	2,702	3,871
White	11,965	25,254	37,219	17,004	25,425	42,429	10,769	24,309	35,078	17,359	26,136	43,495	10,142	23,507	33,649	18,150	26,288	44,438
Grand Total	16,215	37,571	53,786	20,831	33,250	54,081	14,567	37,085	51,652	21,335	34,965	56,300	14,050	36,555	50,605	22,468	36,113	58,581

	1993						1994						1995					
	Lower			Upper			Lower			Upper			Lower			Upper		
Races	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Tota	Part-Time	Full-Time	Sub-Tota	Part-Time	Full-Time	Sub-Tota	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	157	926	1,083	431	947	1,378	111	880	991	445	949	1,394	137	875	1,012	507	990	1,497
African American	1,661	4,510	6,171	2,055	3,537	5,592	1,661	4,538	6,199	2,093	3,565	5,658	1,696	4,685	6,381	2,172	3,689	5,861
Native American	46	82	128	80	84	164	35	87	122	86	80	166	35	127	162	101	105	206
Asian American	738	3,206	3,944	731	2,887	3,618	773	3,687	4,460	775	3,023	3,798	724	3,998	4,722	801	3,326	4,127
Hispanic	1,231	4,449	5,680	1,239	2,955	4,194	1,291	4,574	5,865	1,394	3,165	4,559	1,235	4,762	5,996	1,468	3,481	4,949
White	9,250	22,718	31,968	18,432	25,540	43,972	8,629	21,900	30,529	17,837	24,505	42,342	8,187	22,033	30,220	17,442	24,466	41,907
Grand Total	13,083	35,891	48,974	22,968	35,950	58,918	12,500	35,666	48,166	22,630	35,287	57,917	12,012	36,481	48,493	22,491	36,056	58,547

	1996					
	Lower			Upper		
Races	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	90	965	1,055	481	970	1,450
African American	1,565	4,809	6,373	2,070	3,623	5,693
Native American	34	92	126	122	117	240
Asian American	753	4,282	5,035	806	3,512	4,318
Hispanic	1,188	5,030	6,217	1,496	3,597	5,093
White	7,577	22,375	29,951	16,804	24,068	40,872
Grand Total	11,206	37,552	48,758	21,779	35,887	57,666

APPENDIX D-12
ENROLLMENT BY DIVISION ACROSS RACE-ETHNICITIES
FOUR-YEAR PRIVATE INSTITUTIONS

Races	1990						1991						1992					
	Lower			Upper			Lower			Upper			Lower			Upper		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Tim	Full-Tim	Sub-Tota	Part-Tim	Full-Tim	Sub-Tota
Non-Resident	81	598	679	43	447	490	60	729	789	37	456	493	77	773	850	28	463	491
African American	670	1,945	2,615	341	1,023	1,364	718	2186	2904	323	1077	1400	694	2374	3068	373	1199	1572
Native American	19	42	61	7	26	33	23	32	55	10	30	40	27	36	63	10	28	38
Asian American	339	839	1,178	91	591	682	366	940	1306	111	612	723	359	906	1265	108	641	749
Hispanic	341	1,259	1,600	165	658	823	380	1412	1792	165	726	891	398	1515	1913	220	771	991
White	6,362	11,258	17,620	4,253	9,624	13,877	6145	10160	16305	4190	9587	13777	6326	9917	16243	4551	9022	13573
Grand Total	7,812	15,941	23,753	4,900	12,369	17,269	7692	15459	23151	4836	12488	17324	7881	15521	23402	5290	12124	17414

Races	1993						1994						1995					
	Lower			Upper			Lower			Upper			Lower			Upper		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Tim	Full-Tim	Sub-Tota	Part-Tim	Full-Tim	Sub-Tota
Non-Resident	69	770	839	31	510	541	66	701	767	25	480	505	71	680	751	29	531	560
African American	742	2,077	2,819	360	1,231	1,591	784	2321	3105	398	1271	1669	671	2035	2706	434	1242	1676
Native American	17	52	69	13	37	50	18	56	74	7	25	32	27	53	79	12	33	45
Asian American	350	902	1,252	126	737	863	371	997	1368	127	693	820	362	1083	1445	130	764	894
Hispanic	407	1,472	1,879	227	822	1,049	364	1673	2037	230	873	1103	390	1613	2003	239	901	1139
White	6,327	10•342	16,669	4,527	8,990	13,517	5782	10249	16031	4265	8414	12679	5271	10107	15378	4257	8692	12950
Grand Total	7,912	15,615	23,527	5,284	12,327	17,611	7385	15997	23382	5052	11756	16808	6793	15570	22363	5101	12163	17264

Races	1996					
	Lower			Upper		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	49	600	649	44	605	649
African American	513	2,076	2,589	474	1,361	1,835
Native American	23	61	85	13	41	54
Asian American	328	1,117	1,444	151	840	992
Hispanic	321	1,726	2,047	263	1,010	1,273
White	4,132	9,981	14,113	4,175	9,363	13,539
Grand Total	5,366	15,561	20,927	5,120	13,221	18,341

Source: Integrated Postsecondary Education Data System (IPEDS) 1993-1994

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APPENDIX D-13
ENROLLMENT IN GRADUATE PROGRAMS BY RACE/ETHNICITY
FOUR-YEAR PUBLIC INSTITUTIONS

Races	1990 Graduate			1991 Graduate			1992 Graduate		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	1,178	2,064	3,242	1,005	1,959	2,964	1,085	1,993	3,078
African American	1,049	221	1,270	1,112	279	1,391	1,180	308	1,488
Native American	48	4	52	56	7	63	52	9	61
Asian American	822	223	1,045	832	283	1,115	801	249	1,050
Hispanic	714	181	895	759	192	951	797	201	998
White	16,504	3,338	19,842	16,638	3,532	20,170	16,692	3,712	20,404
Grand Total	20,315	6,031	26,346	20,402	6,252	26,654	20,607	6,472	27,079

Races	1993 Graduate			1994 Graduate			1995 Graduate		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	1,156	1,883	3,039	1,061	1,724	2,785	1,233	1,877	3,110
African American	1,282	340	1,622	1,349	367	1,716	1,388	342	1,731
Native American	42	11	53	38	13	51	42	18	60
Asian American	892	276	1,168	1,032	298	1,330	1,087	346	1,433
Hispanic	863	212	1,075	917	232	1,149	1,028	257	1,286
White	16,539	3,587	20,126	16,470	3,534	20,004	16,343	3,233	19,576
Grand Total	20,774	6,309	27,083	20,867	6,168	27,035	21,121	6,075	27,196

Races	1996 Graduate		
	Part-Time	Full-Time	Sub-Total
Non-Resident	811	2,282	3,094
African American	1,361	372	1,734
Native American	31	24	55
Asian American	1,057	414	1,471
Hispanic	1,020	303	1,323
White	15,294	3,601	18,895
Grand Total	19,575	6,996	26,571

APPENDIX D-14
ENROLLMENT IN FIRST PROFESSIONAL PROGRAMS BY RACE/ETHNICITY
FOUR-YEAR PUBLIC INSTITUTIONS

Races	1990 Professional			1991 Professional			1992 Professional		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	1	4	5	1	17	18	0	8	8
African American	51	285	336	51	321	372	56	331	387
Native American	0	3	3	1	4	5	1	2	3
Asian American	21	318	339	20	381	401	19	419	438
Hispanic	19	198	217	22	204	226	29	235	264
White	352	2,226	2,578	334	2,167	2,501	314	1,993	2,307
Grand Total	444	3,034	3,478	429	3,094	3,523	419	2,988	3,407

Races	1993 Professional			1994 Professional			1995 Professional		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	3	6	9	5	8	13	6	12	19
African American	67	325	392	64	333	397	64	333	397
Native American	1	3	4	0	5	5	0	6	6
Asian American	15	476	491	22	517	539	15	568	583
Hispanic	30	246	276	36	239	275	35	249	285
White	300	1,944	2,244	317	1,990	2,307	322	1,981	2,303
Grand Total	416	3,000	3,416	444	3,092	3,536	443	3,150	3,593

Races	1996 Professional		
	Part-Time	Full-Time	Sub-Total
Non-Resident	5	18	23
African American	136	371	507
Native American	0	7	7
Asian American	67	685	752
Hispanic	67	290	356
White	694	2,158	2,852
Grand Total	969	3,529	4,498

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APPENDIX D-15
ENROLLMENT IN GRADUATE PROGRAMS BY RACE/ETHNICITY
FOUR-YEAR PRIVATE INSTITUTIONS

Races	1990 Graduate			1991 Graduate			1992 Graduate		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	258	1,384	1,642	294	1,532	1,826	349	1,615	1,964
African American	362	114	476	428	152	580	486	159	645
Native American	39	7	46	26	7	33	24	4	28
Asian American	414	199	613	484	239	723	486	215	701
Hispanic	237	71	308	255	107	362	271	153	424
White	9,792	2,392	12,184	10,149	2,712	12,861	10,020	2,686	12,706
Grand Total	11,102	4,167	15,269	11,636	4,749	16,385	11,636	4,832	16,468

Races	1993 Graduate			1994 Graduate			1995 Graduate		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	264	1,435	1,699	264	1,351	1,615	264	1,429	1,692
African American	464	169	633	489	166	655	506	163	670
Native American	34	10	44	33	6	39	30	9	39
Asian American	496	254	750	514	257	771	557	272	829
Hispanic	267	131	398	240	102	342	257	113	370
White	9,957	2,791	12,748	9,573	2,842	12,415	8,908	2,965	11,872
Grand Total	11,482	4,790	16,272	11,113	4,724	15,837	10,521	4,951	15,472

Races	1996 Graduate		
	Part-Time	Full-Time	Sub-Total
Non-Resident	230	1,687	1,917
African American	507	191	698
Native American	22	9	30
Asian American	592	336	929
Hispanic	281	134	415
White	8,360	3,207	11,567
Grand Total	9,992	5,564	15,556

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APPENDIX D-16
ENROLLMENT IN FIRST PROFESSIONAL PROGRAMS BY RACE/ETHNICITY
FOUR-YEAR PRIVATE INSTITUTIONS

Races	1990 Professional			1991 Professional			1992 Professional		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	7	55	62	7	51	58	6	37	43
African American	98	133	231	114	164	278	126	153	279
Native American	1	2	3	0	5	5	2	5	7
Asian American	25	80	105	27	88	115	39	101	140
Hispanic	26	55	81	25	63	88	29	72	101
White	438	1,765	2,203	446	1,808	2,254	501	1,916	2,417
Grand Total	595	2,090	2,685	619	2,179	2,798	703	2,284	2,987

Races	1993 Professional			1994 Professional			1995 Professional		
	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total	Part-Time	Full-Time	Sub-Total
Non-Resident	6	74	80	4	70	74	4	75	79
African American	108	154	262	114	128	242	83	146	229
Native American	2	6	8	4	5	9	7	4	11
Asian American	22	87	109	17	94	111	18	92	111
Hispanic	32	71	103	27	67	94	30	70	100
White	456	2,078	2,534	484	2,038	2,522	497	1,991	2,488
Grand Total	626	2,470	3,096	650	2,402	3,052	639	2,379	3,018

Races	1996 Professional		
	Part-Time	Full-Time	Sub-Total
Non-Resident	10	66	76
African American	133	132	265
Native American	7	7	13
Asian American	28	106	134
Hispanic	32	74	105
White	751	2,282	3,033
Grand Total	961	2,665	3,626

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APPENDIX D-17
ENROLLMENT AMONG RACE AND ETHNIC GROUPS IN COMMUNITY COLLEGES

	1990			1991			1992		
Races	Part-Time	Full-Time	Total	Part-Time	Full-Time	Total	Part-Time	Full-Time	Total
Non-Resident	1,420	2,413	3,833	1,554	2,686	4,240	1,840	2,616	4,456
African American	8,481	6,006	14,487	9,184	6,965	16,149	10,204	7,693	17,897
Native American	223	87	310	234	128	362	223	147	370
Asian American	2,708	1,707	4,415	2,940	1,976	4,916	3,222	2,334	5,556
Hispanic American	4,968	4,285	9,253	5,419	4,780	10,199	5,727	5,285	11,012
Caucasian American	60,540	31,072	91,612	63,791	32,942	96,733	64,925	34,497	99,422
Grand Total	78,340	45,570	123,910	83,122	49,477	132,599	86,141	52,572	138,713

	1993			1994			1995			1996		
Races	Part-Time	Full-Time	Total	Part-Time	Full-Time	Total	Part-Time	Full-Time	Total	Part-Time	Full-Time	Total
Non-Resident	2,051	2,873	4,924	1,288	1,713	3,001	1,589	1,670	3,259	1,626	1,746	3,372
African American	10,303	7,925	18,228	10,436	8,236	18,672	10,047	7,991	18,038	9,474	8,553	18,028
Native American	258	176	434	212	155	367	221	133	354	189	140	329
Asian American	3,378	2,516	5,894	3,328	2,754	6,082	3,574	2,859	6,433	3,360	3,052	6,412
Hispanic American	6,005	5,649	11,654	6,563	6,738	13,301	6,720	6,715	13,435	6,786	7,564	14,350
Caucasian American	63,059	35,777	98,836	59,260	35,083	94,343	56,226	33,001	89,227	51,615	32,997	84,612
Grand Total	85,054	54,916	139,970	81,087	54,679	135,766	78,378	52,369	130,747	73,050	54,053	127,103

APPENDIX E
CLASSIFICATION OF INSTRUCTIONAL PROGRAM GROUPINGS USED IN DISCIPLINE AREAS

The Classification of Instructional Programs (CIP) is a taxonomy developed by the National Center for Education Statistics to help categorize the various fields of study offered at postsecondary institutions across the country. This taxonomy has 41 broad "two digit" categories which are shown in a table on the next page. The table below shows how these 41 CIP codes were grouped to form the 15 discipline areas used in Chapter 3.0:

Discipline Name	CIP Codes Included (2-Digit)
Agriculture-Biological Sciences	01, 02, 03, 26
Area/Multidisciplinary Studies	05, 30
Business Management- Marketing	52, 08
Communications	09, 10
Computer Science/Mathematics	11, 27
Education	13
Engineering-Architecture	14, 15, 04
Foreign Languages	16
Health Professions	51
Law	22
Liberal arts/Eng. Lit/Philosophy/Religion	23, 24, 38, 39
Physical Sciences	40, 41
Social Sciences	45, 42
Vocational Trades	46, 47, 48, 49
Miscellaneous	12, 19, 20, 31, 43, 44, 50, 25, 29

TWO-DIGIT CLASSIFICATION OF INSTRUCTIONAL PROGRAM CATEGORIES

Code	Discipline Name
01	Agricultural Business and Production
02	Agricultural Sciences
03	Conservation and Renewable Natural Resources
04	Architecture and Related Programs
05	Area, Ethnic, and Cultural Studies
08	Marketing Operations
09	Communications
10	Communications Technologies
11	Computer and Information Sciences
12	Personal and Miscellaneous Services
13	Education
14	Engineering
15	Engineering Technologies
16	Foreign Languages and Literatures
19	Home Economics
20	Vocational Home Economics
22	Law and Legal Studies
23	English Language and Letters
24	Liberal Arts and Sciences/Humanities
25	Library Science
26	Biological Sciences/Life Sciences
27	Mathematics
29	Military Technologies
30	Multi/Interdisciplinary Studies
31	Parks, Recreation, Leisure and Fitness Studies
38	Philosophy and Religion
39	Theological Studies and Religious Vocations
40	Physical Sciences
41	Science Technologies
42	Psychology
43	Protective Services
44	Public Administration and Services
45	Social Sciences and History
46	Construction Trades
47	Mechanics and Repairers
48	Precision Production Trades
49	Transportation
50	Visual and Performing Arts
51	Health Professions and Related Sciences
52	Business Management and Administrative Services

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